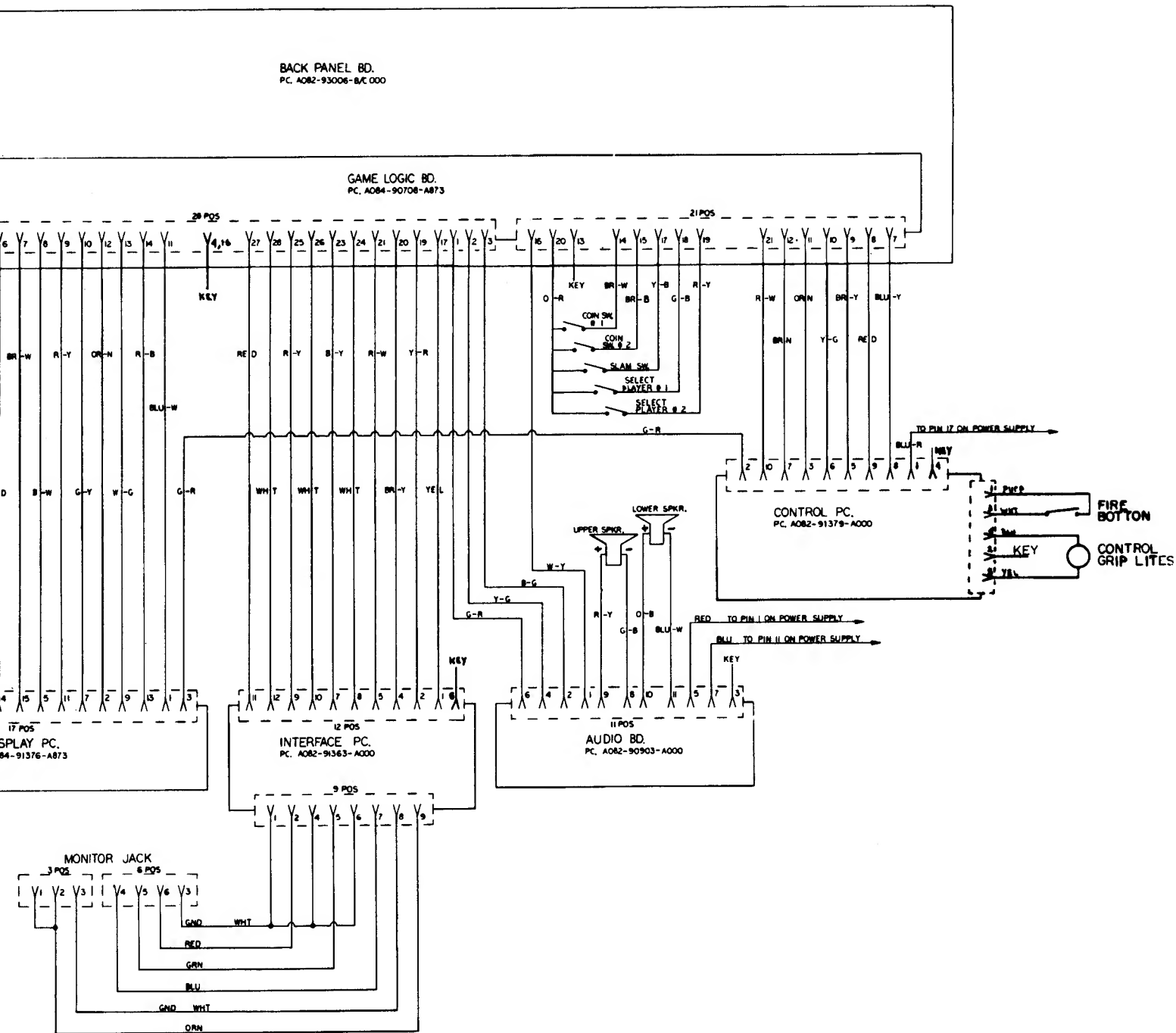
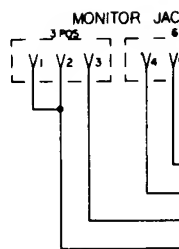
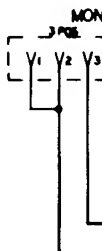


GOLF U.R.
MIDWAY MFG. CO.
10750 W. GRAND AVE.
FRANKLIN PARK, IL. 60131

WIRING SCHEMATIC * MO51-00873-A037

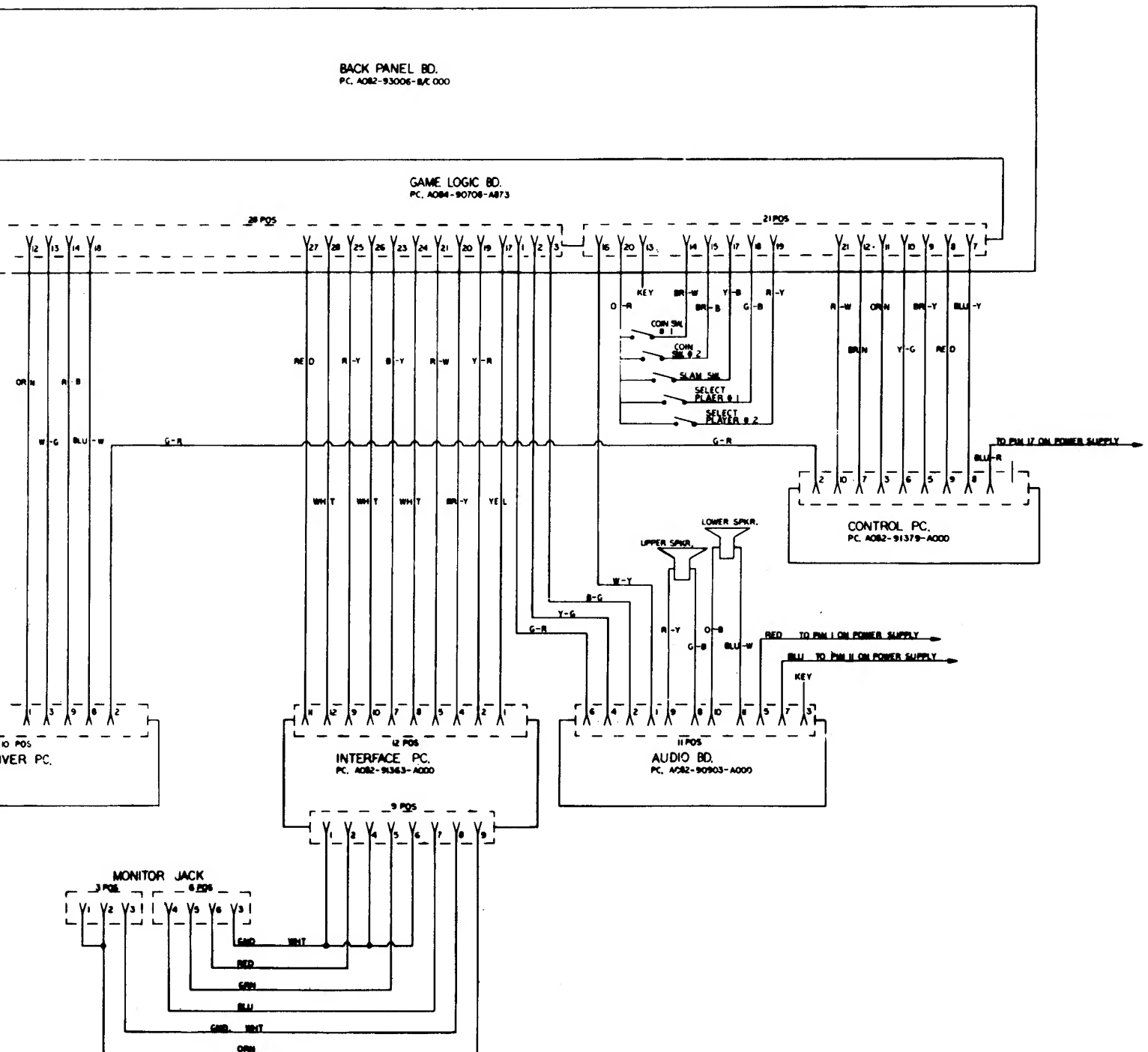






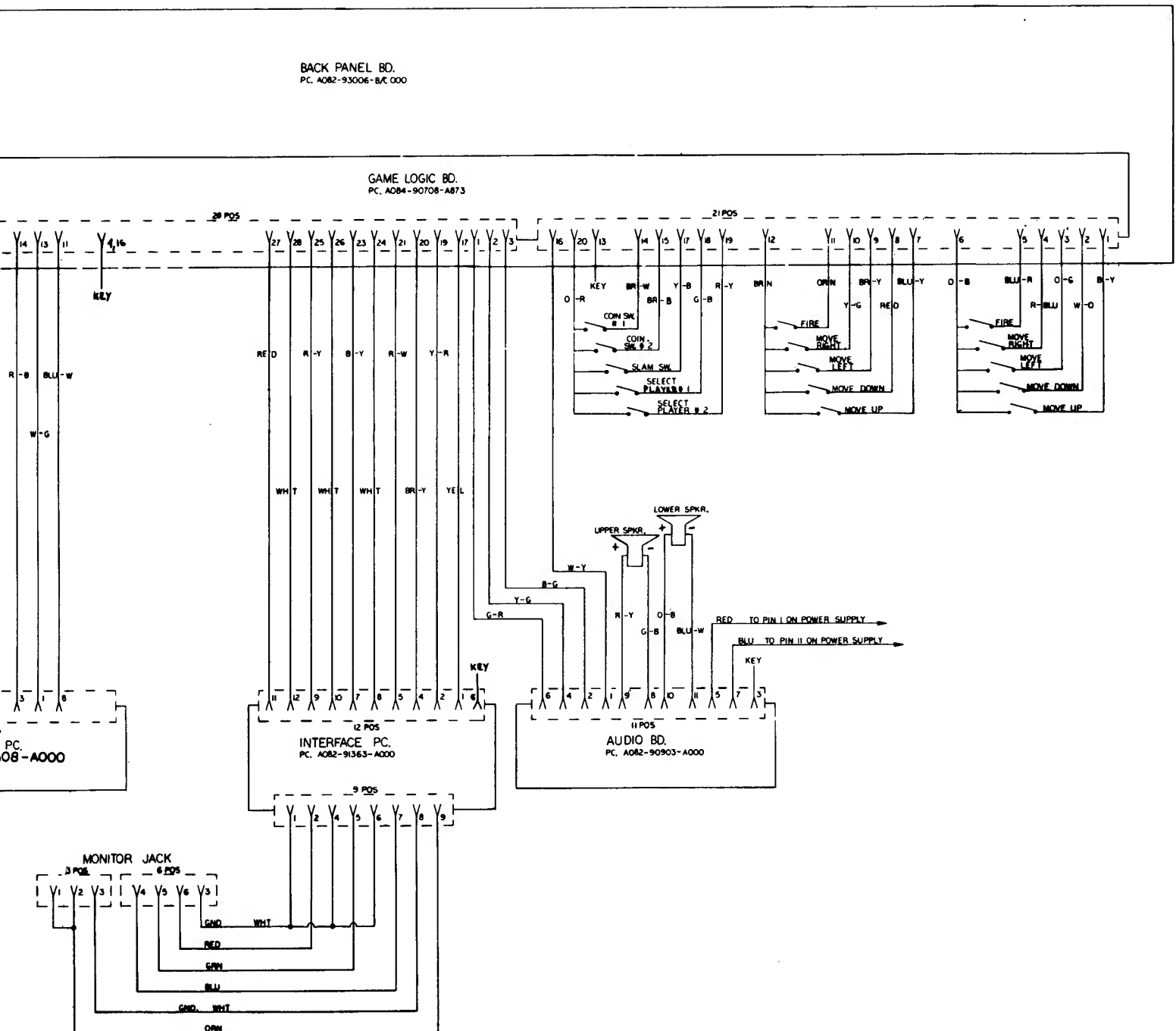
GORF MINI
MIDWAY MFG. CO.
10750 W. GRAND AVE.
FRANKLIN PARK, IL. 60131

WIRING SCHEMATIC # M051-00926-A025

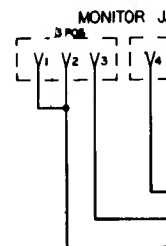
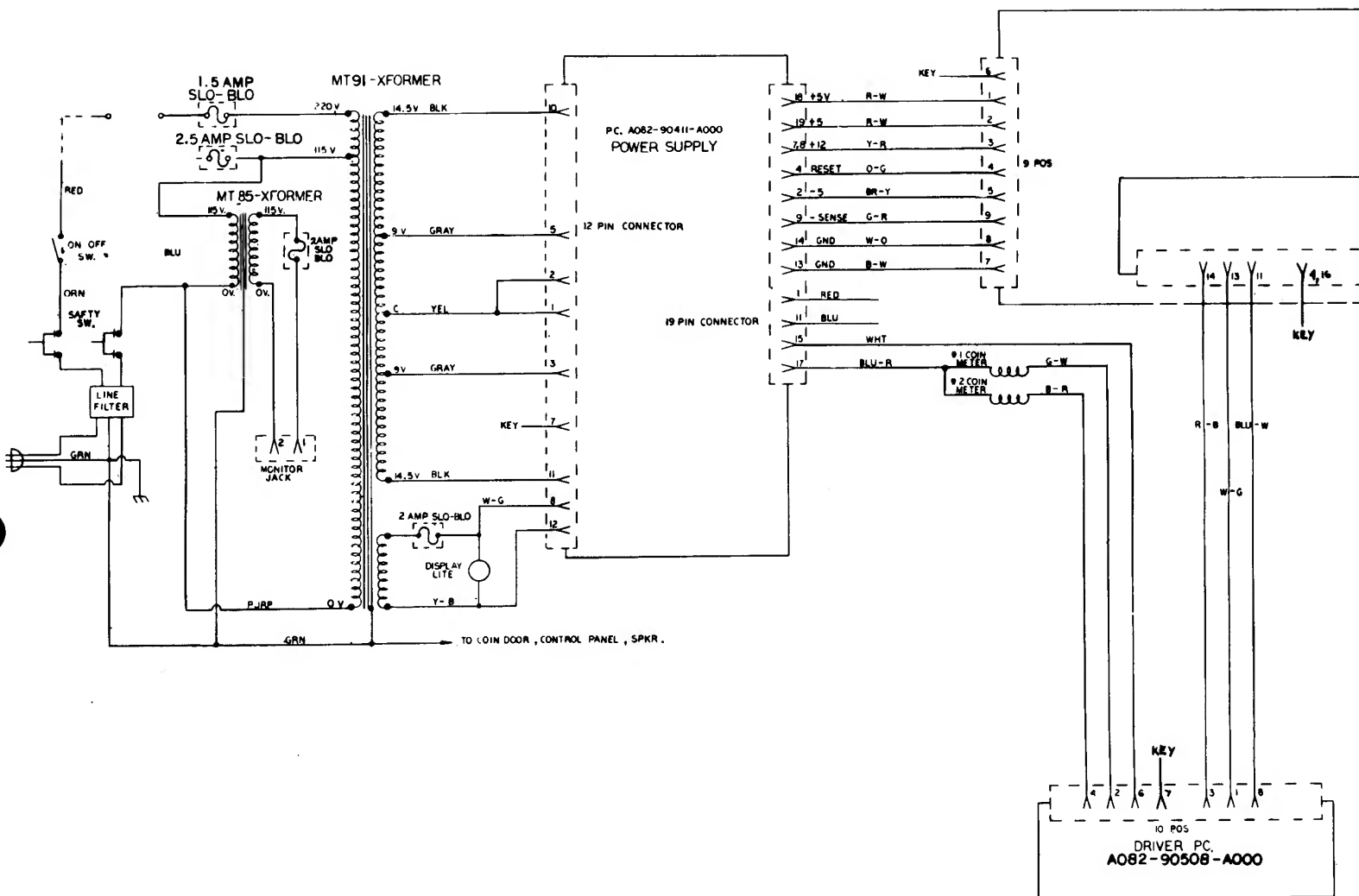


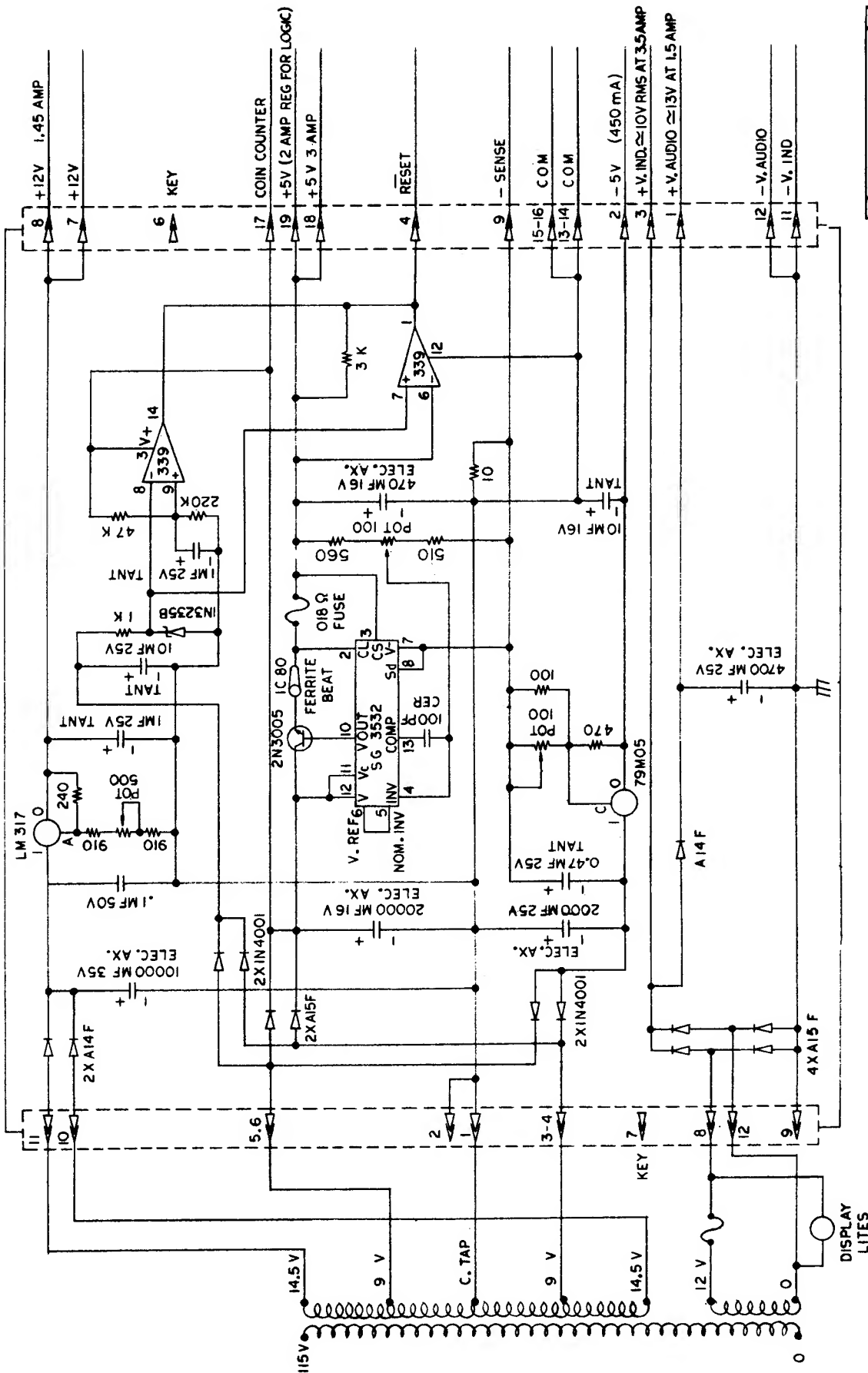
GORF C.T.
MIDWAY MFG. CO.
10750 W. GRAND AVE.
FRANKLIN PARK, IL. 60131

WIRING SCHEMATIC # MC51-10927-A023



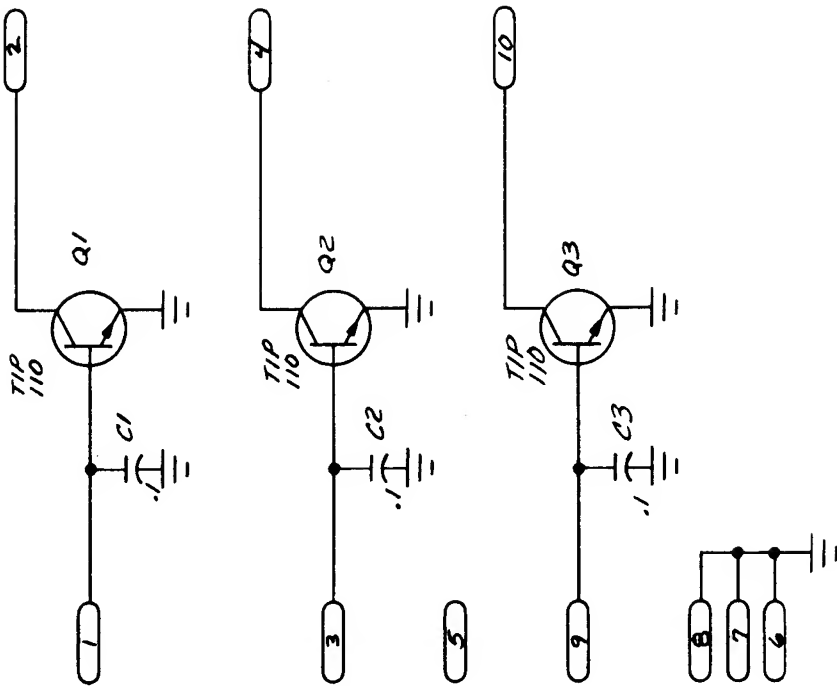
WIRING SCHEMATIC





DRAWING NO. MO51-00789-A011

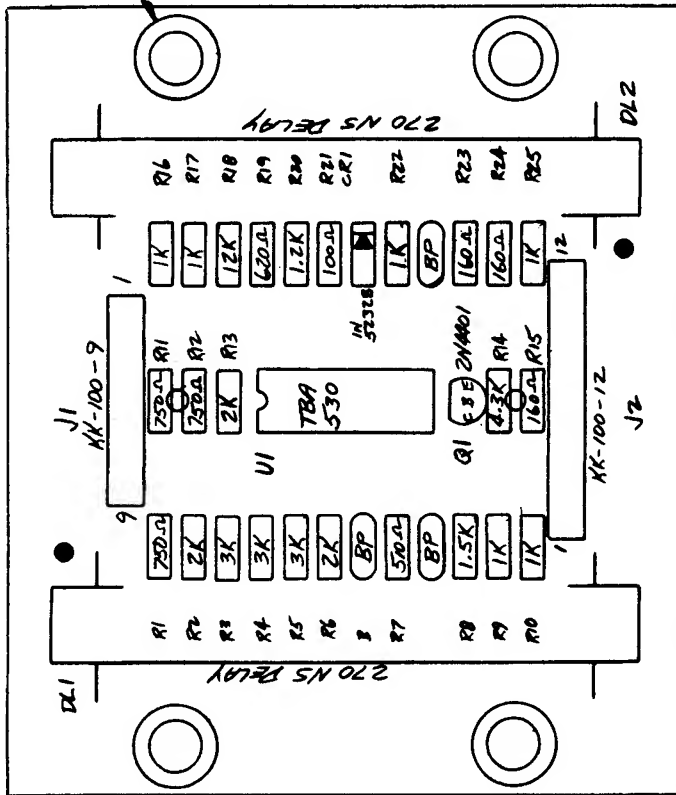
REVISIONS		USED ON		SCALE		HEAT TREAT		DO NOT SCALE DWG.		MIN TOLERANCES UNLESS SPECIFIED		MIDWAY MFG. CO.	
		NO. REQ'D								CONSTRUCTION T.O. 000		FRANKLIN PK. ILL.	
										PRACTICAL 1/16" DEC.		PART NO.	
										DATE 7/24/80		A082-90411-A000	
												COMMERCIAL CARD RACK	
												PWR SPLY SCHEMATIC	



J1

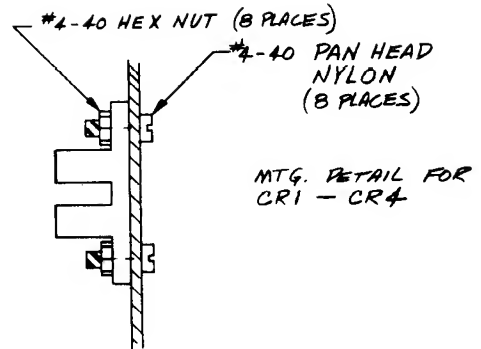
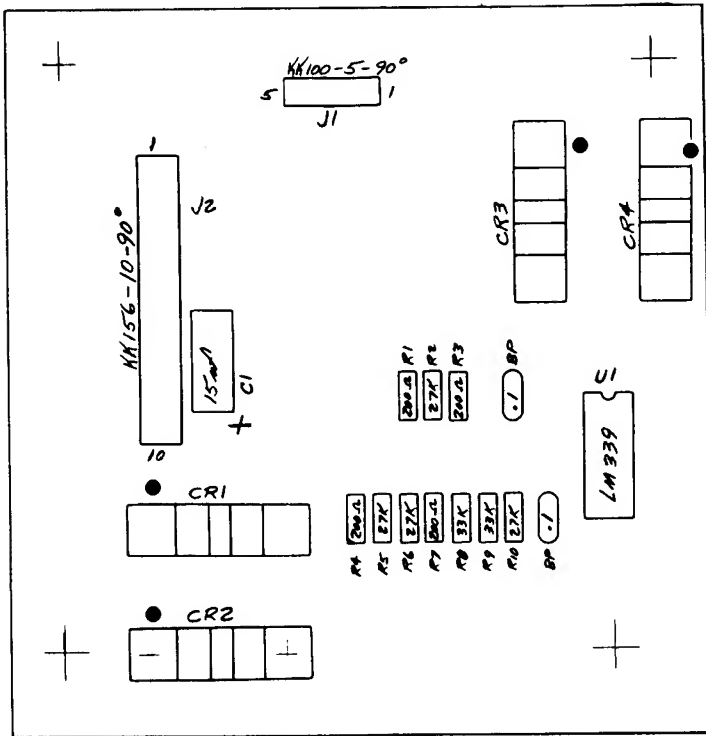
MO51-00926-A024

SCALE	DATE	DRAWN BY	MIDWAY MFG. CO.
—	9-17-80	OTTO	
MATERIAL	FINISH	TITLE	DRIVER BOARD
		FOR	GOLF MINI & COCKTAIL
		NO	A082-90508-A000
PROD RELEASE	10-10-80		



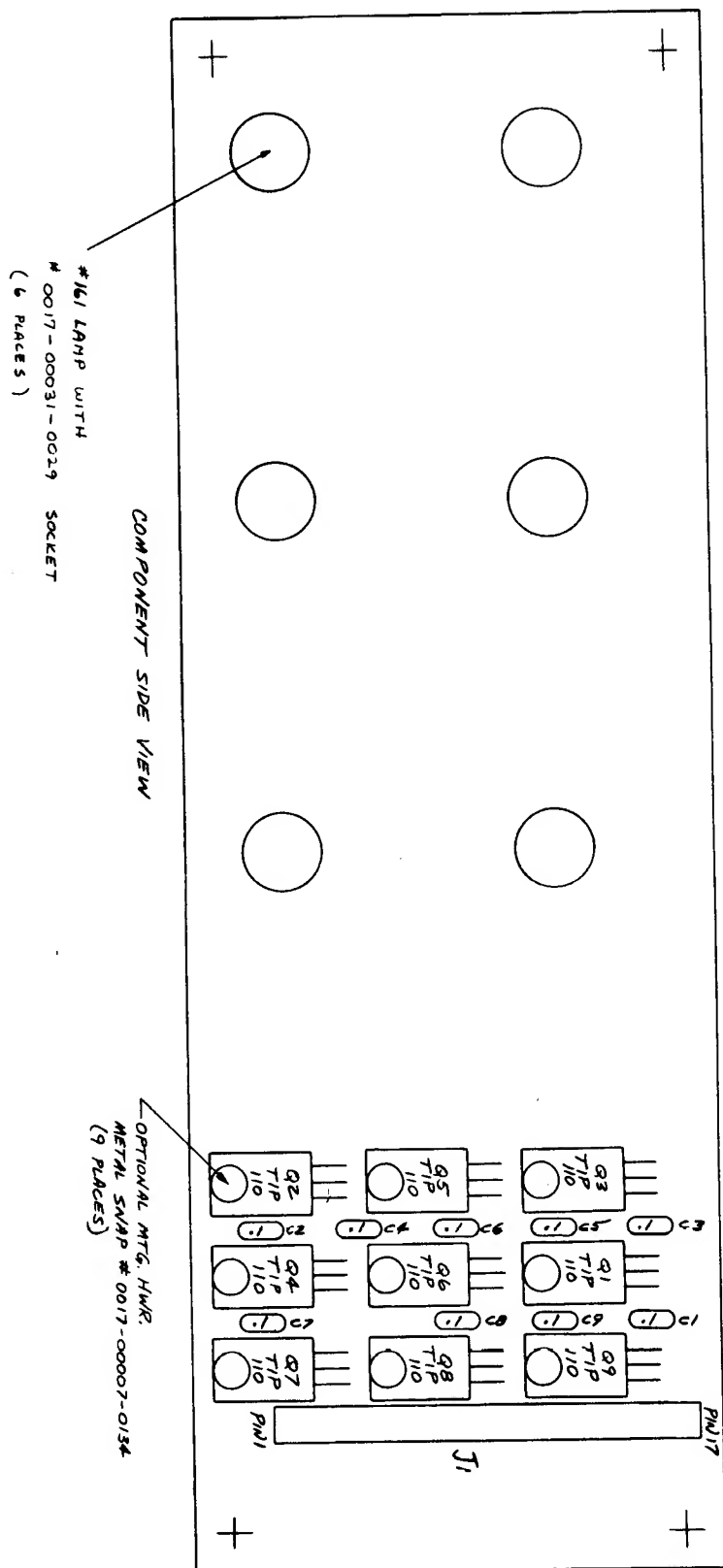
REV. 10/80		REV. 10/80	
MIDWAY MFG. CO.		MIDWAY MFG. CO.	
FRANKLIN PARK, ILL. 60131		FRANKLIN PARK, ILL. 60131	
PART NO.		PART NO.	
A082-91363		A082-91363	
RGB INTERFACE		RGB INTERFACE	
COMM. CARD RACK		COMM. CARD RACK	
A000		A000	
M051-00873-A029		M051-00873-A029	
DO NOT SCALE SWG.		DO NOT SCALE SWG.	
USED ON		USED ON	
NO. REQ'D		NO. REQ'D	
SCALE		SCALE	
MATERIAL		MATERIAL	
FINISH		FINISH	
HEAT TREAT		HEAT TREAT	
DRILL		DRILL	
CUT		CUT	
HOLE DIA.		HOLE DIA.	
HOLE DIA. - .000 - .000		HOLE DIA. - .000 - .000	

SCALE	DATE	FORN BY	MIDWAY MFG. CO.
NONE	8-29-80	OTTO	
MATERIAL	FINISH	TITLE	RGB INTERFACE
		FOR	CCRS
100-1000000 100-1-201 100-1-201			NO 0082-91363-0000



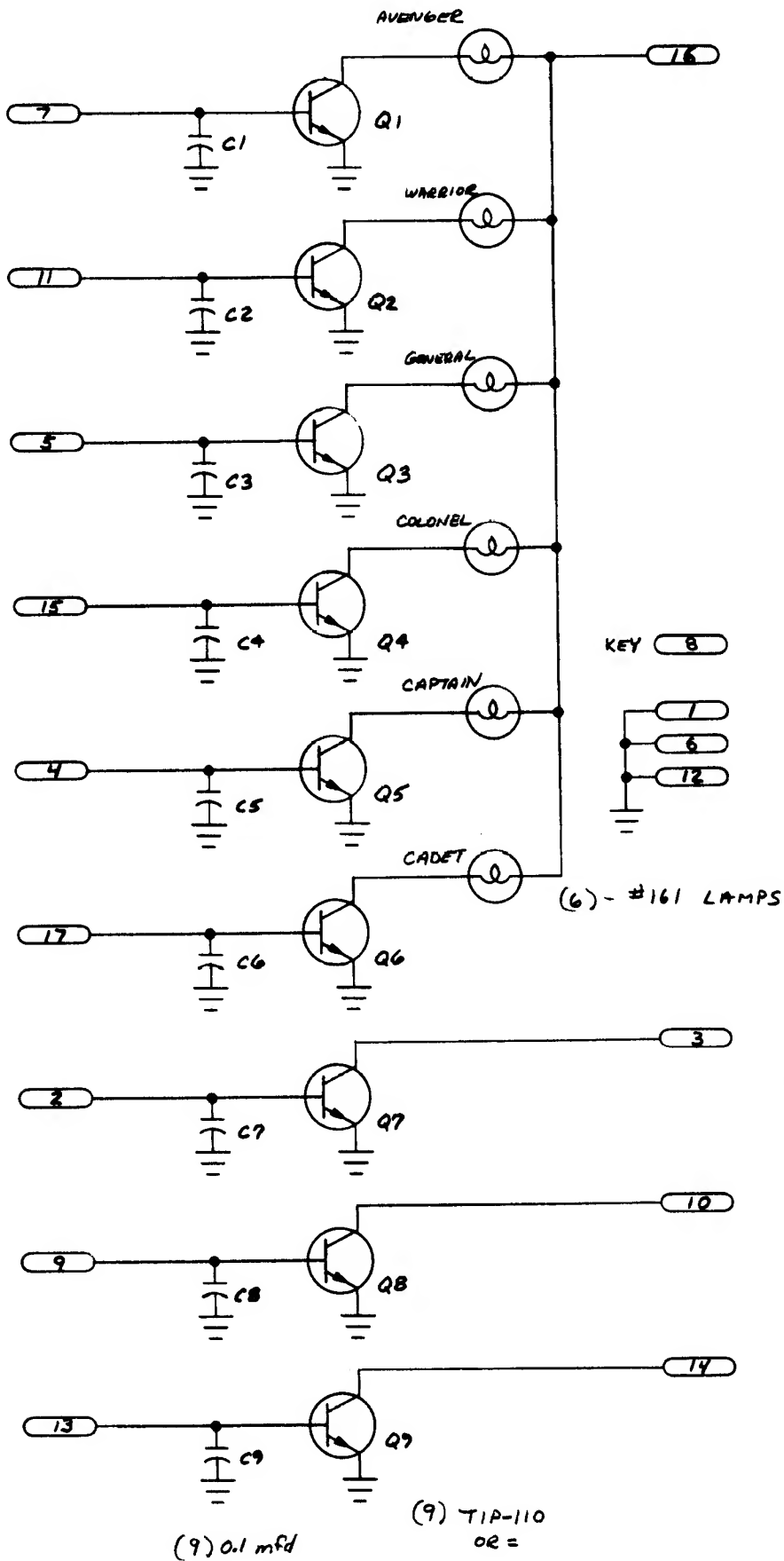
M051-00873-A027		REVISIONS	
DO NOT SCALE DWG.		SCALE 2-1	NO. REQ'D 1
HEAT TREAT		MIDWAY MFG. CO.	
DIM. TOLERANCES UNLESS SPECIFIED		FRANKLIN PK. ILL.	
CONCENTRICITY F.A.S. 953		PART NO.	
PRACEDIMENTAL 1/164		CONTROL GRIP ASSY.	
DECIMAL 0.005			
HOLE DIA. 0.002-0.005			
DATE			

A082-91379-A000



M051-00873-A028	
SCALE	DATE
2/1	4/4
DATE	FROM
TO, LENGTH	
111' 00"	
REMARKS	
NO	FOR
A004	PLAYS & COM. COUNTS
-	91376-A873
MIDWAY MFG. CO.	
DISPLAY BOARD	

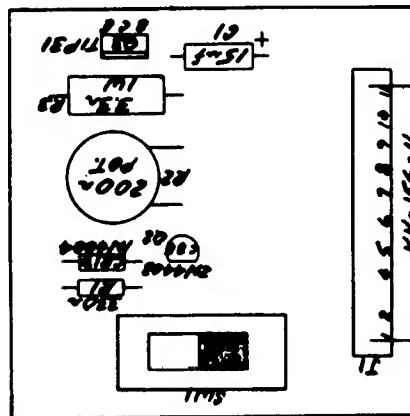
J1



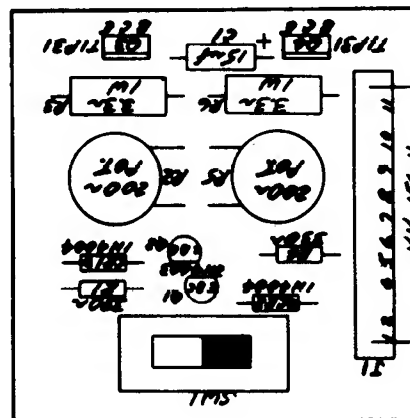
J1

M051-00873-A026

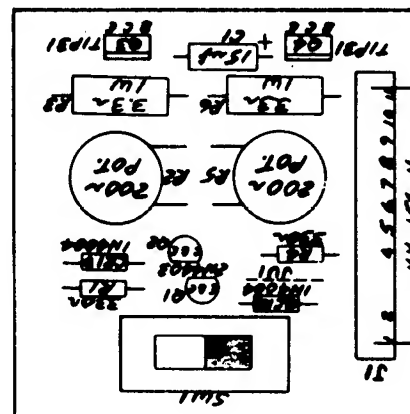
SCALE	DATE	DRAWN BY	MIDWAY MFG. CO.
	9-17-80	OTTO	
MATERIAL	FINISH	TITLE	DISPLAY BOARD ASSY
		FOR	GOLF UPRIGHT
		NO.	A084 - 91376 - A873
		APPROVED	10.10.81



MONO
AUDIO AMP BOARD ASSEMBLY
A082-9094-A000



STEREO
AUDIO AMP BOARD ASSEMBLY
A082-9093-A000

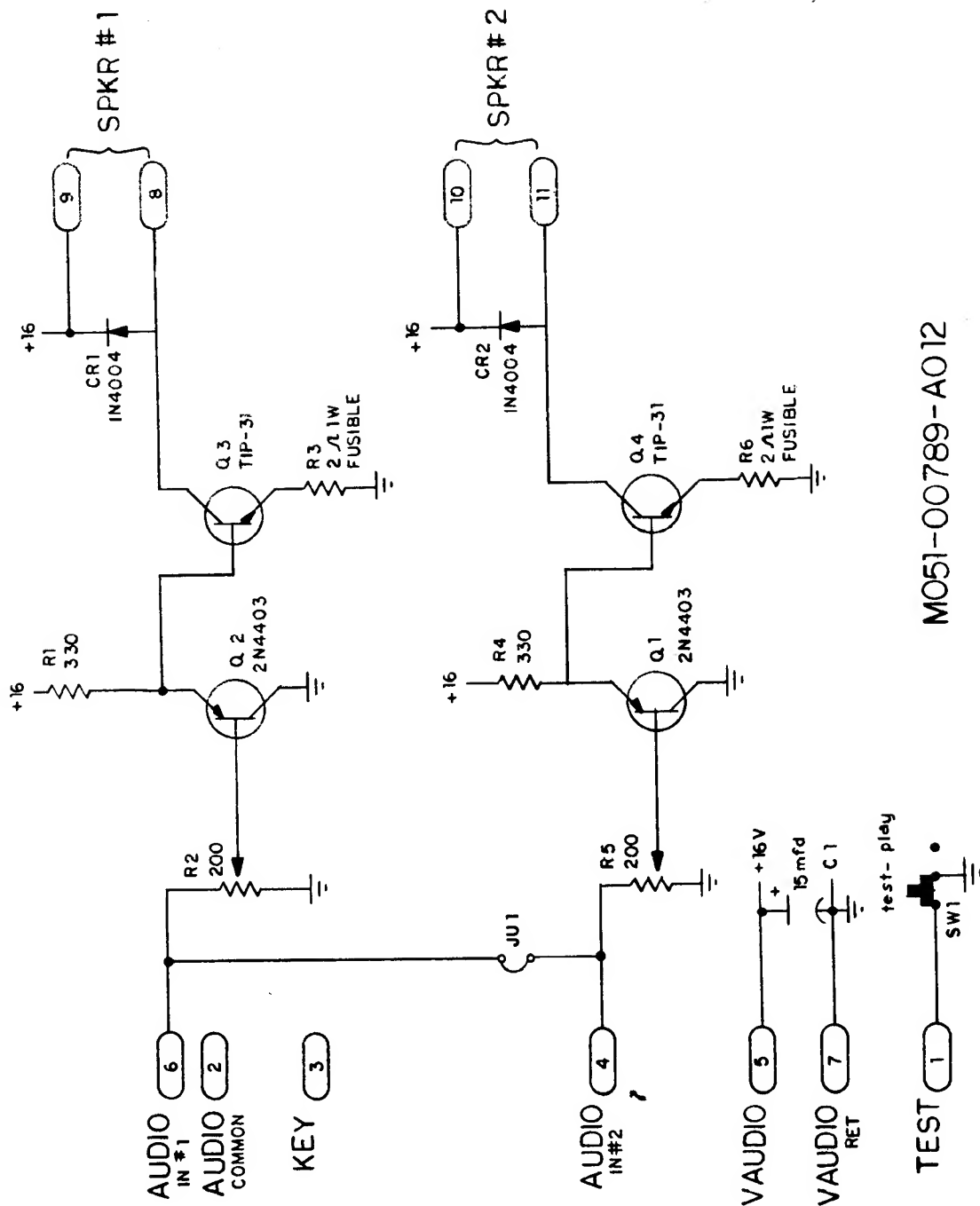


DUAL MONO
AUDIO AMP BOARD ASSEMBLY
A082-9095-A000

MO51-00789-A013

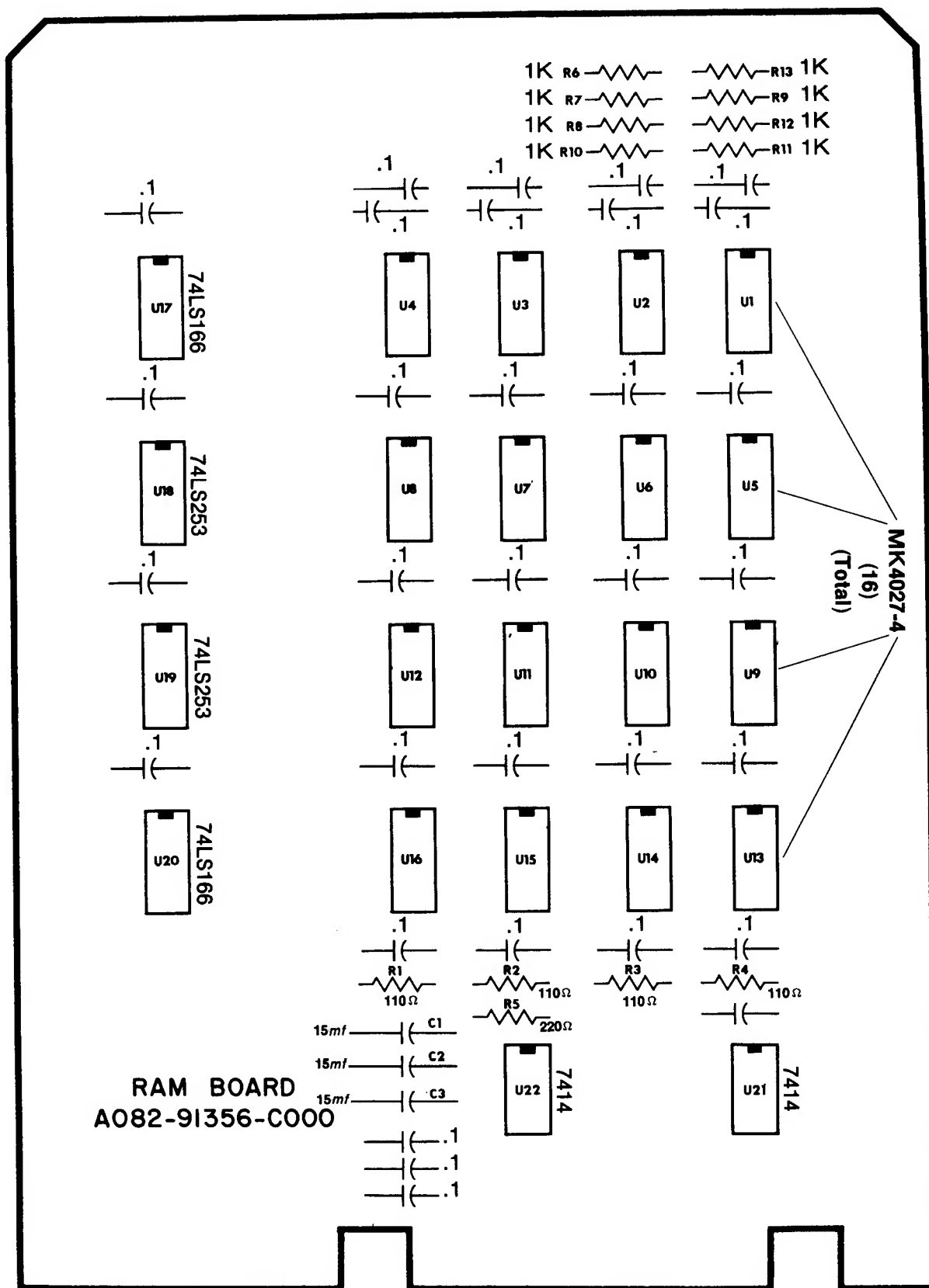
NOTE*

* FOR MONO 1/2 CIRCUIT SHOWN IS USED
FOR DUEL MONO BOTH CIRCUITS ARE
USED JUMPER JU1 IS USED
FOR STEREO BOTH CIRCUITS ARE
USED JUMPER JU1 IS NOT USED

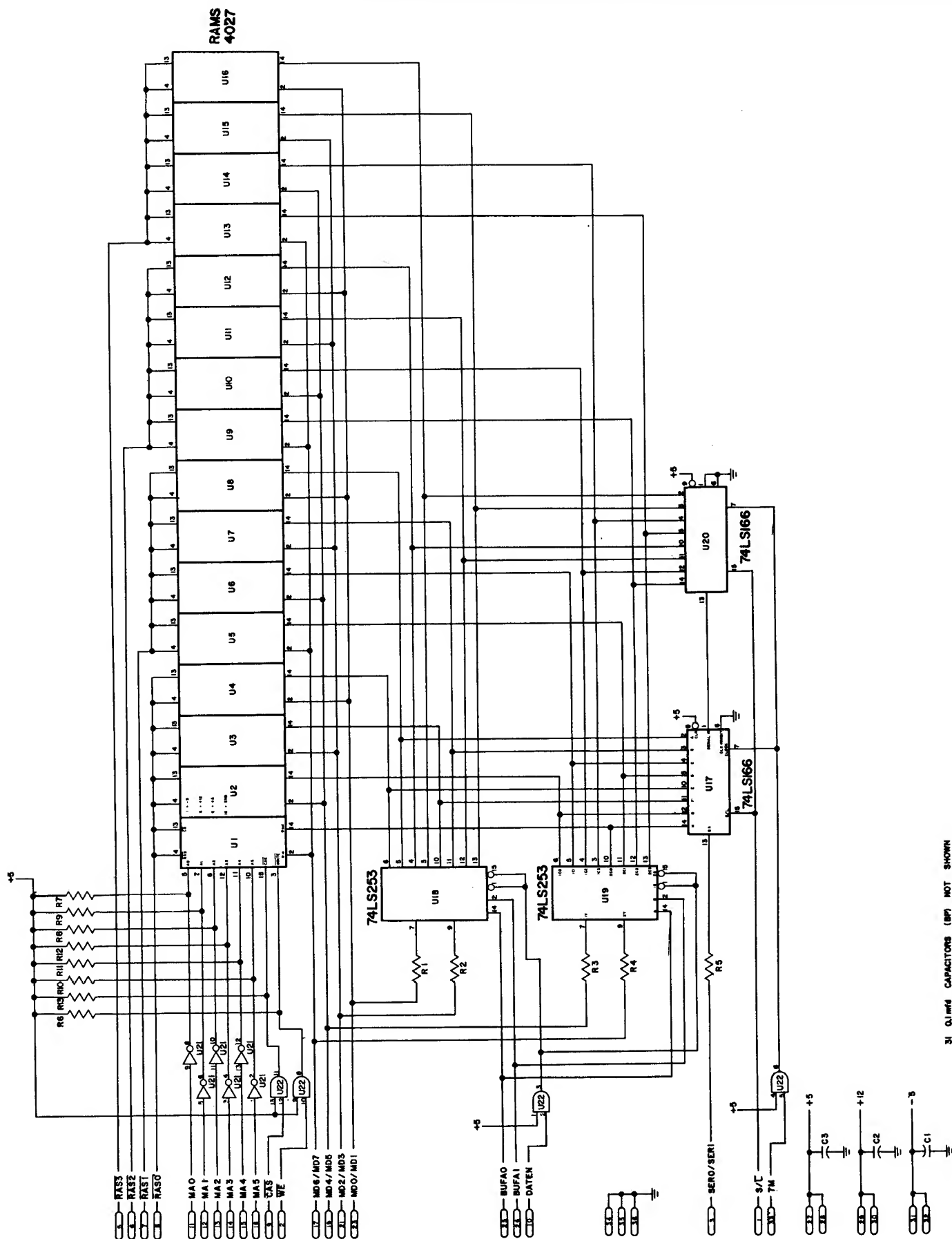


MO51-00789-A012

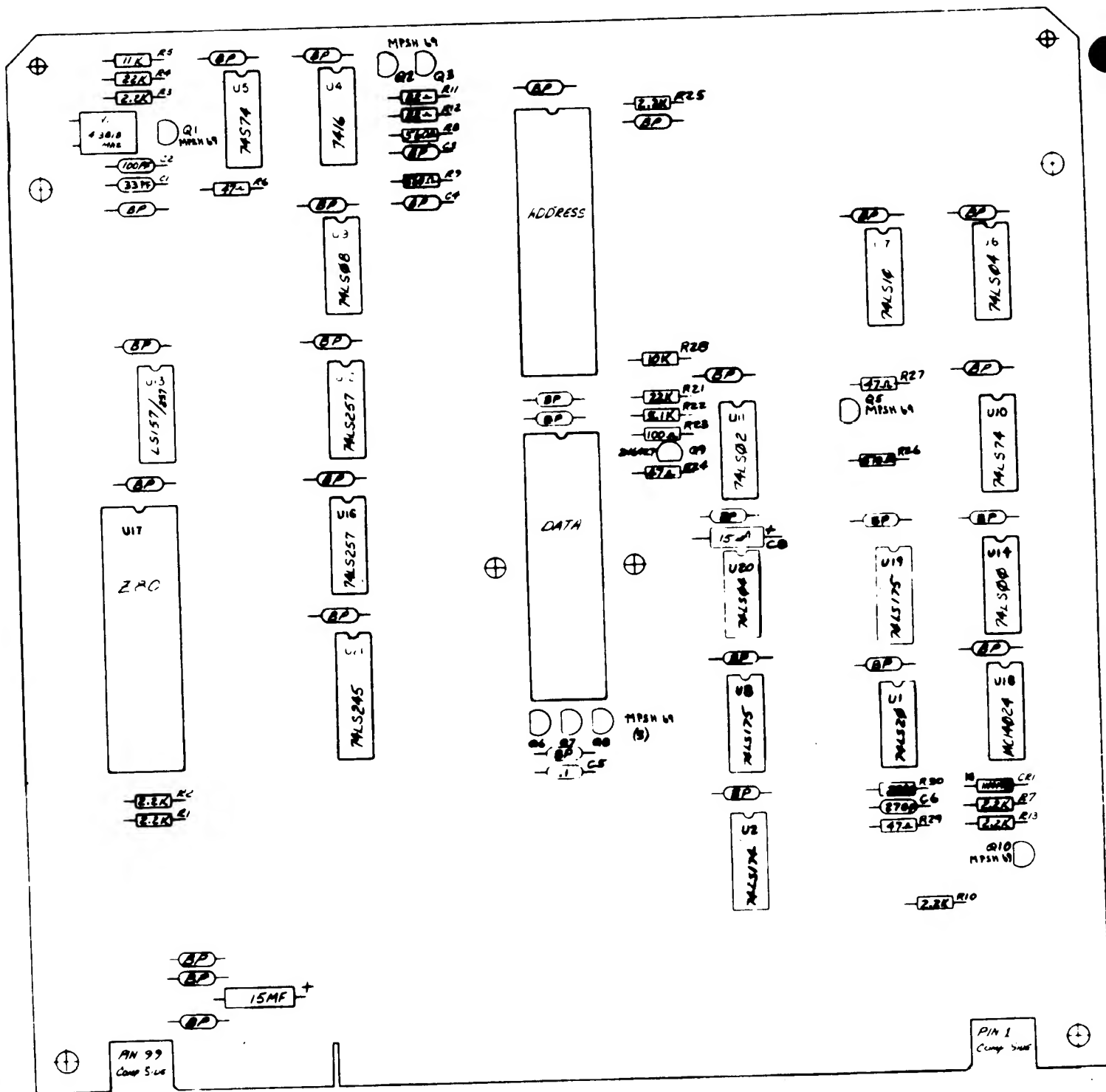
test-play



COMPONENT PART NO. M051-00789-C003



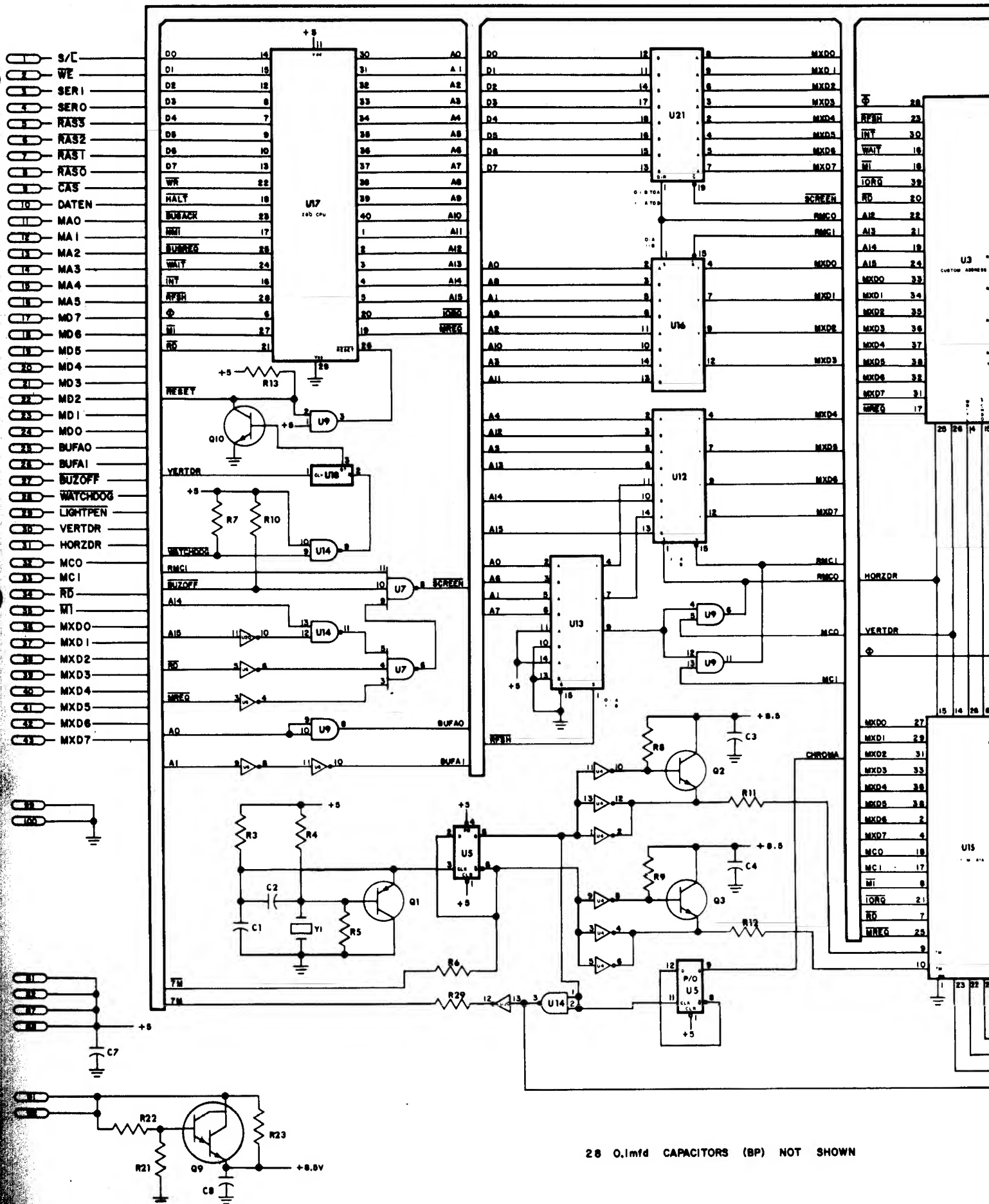
31 01 m46 CAPACITORS (BPP) NOT SHOWN



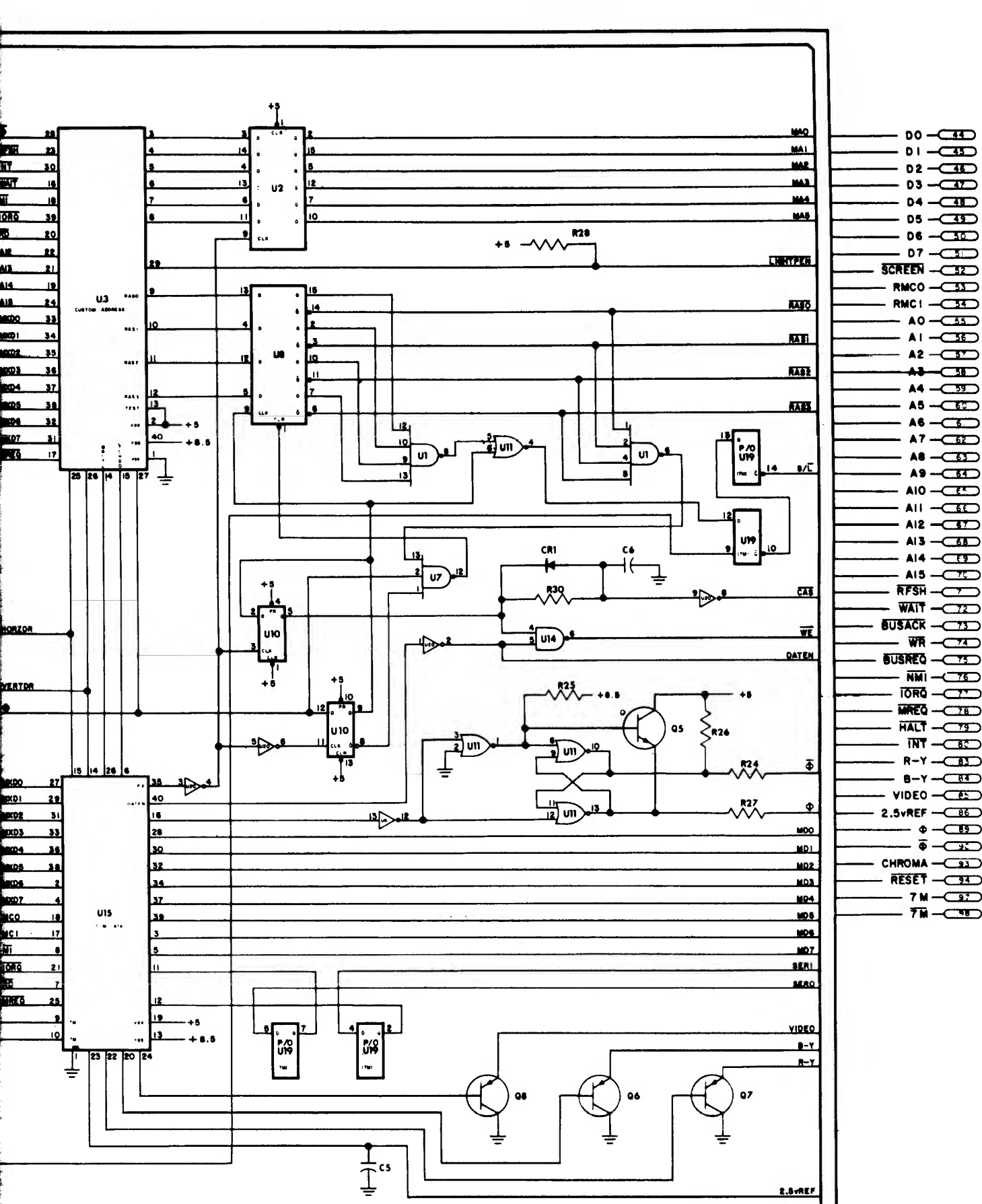
Component Side

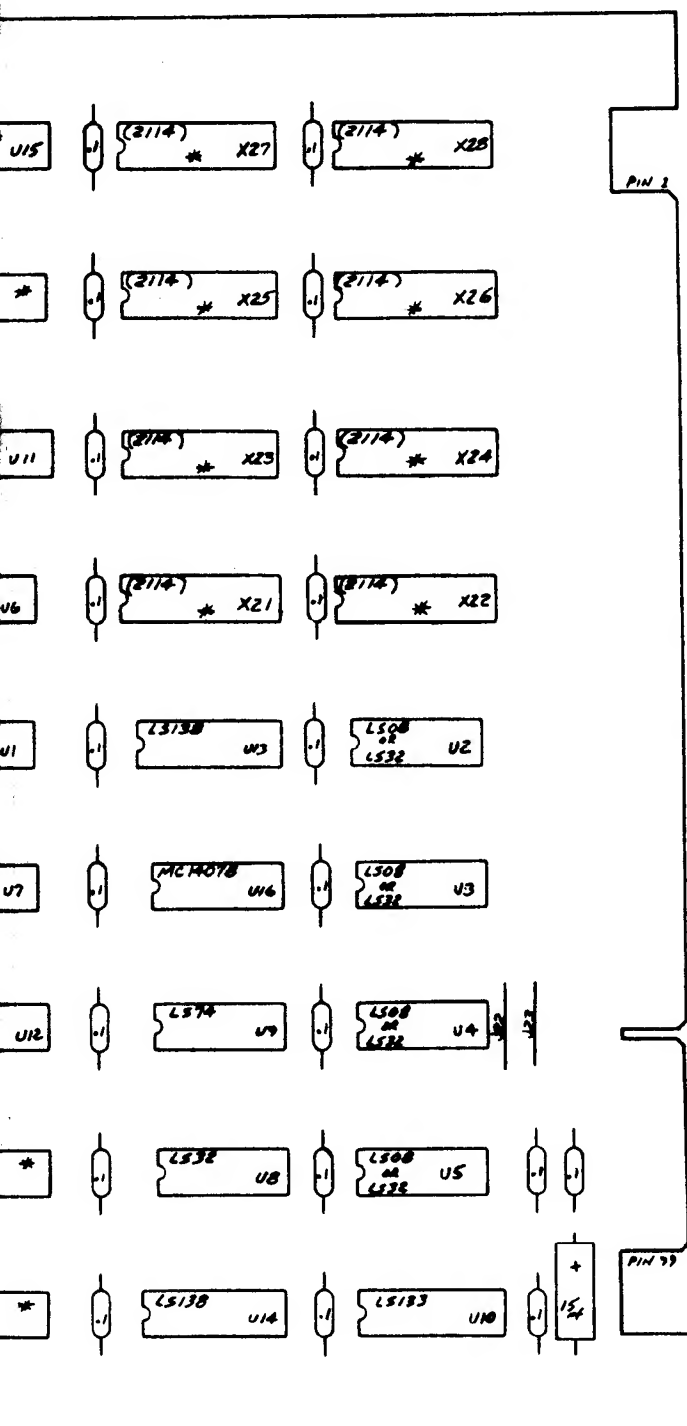
M051-00789-F006

DATE	3/12/00	REV	2:1	9-77	BY	KE	MIDWAY MFG. CO.
DESIGNED BY	3-12-00	CHECKED BY					CPU BOARD
TESTED BY	7-15-00	APPROVED BY					CommCard Rack
							A082-91354-F000



28 0.1mfd CAPACITORS (BP) NOT SHOWN



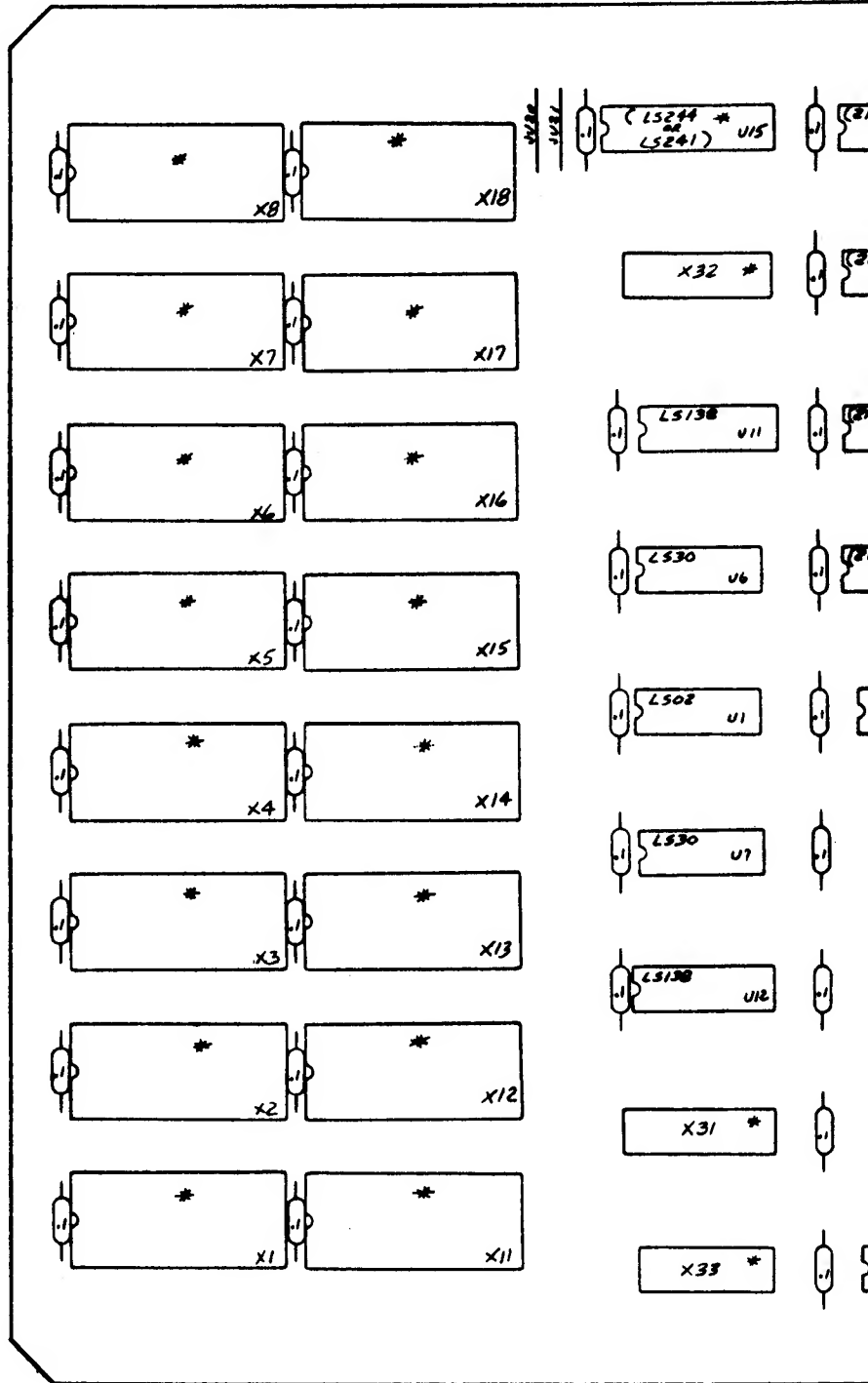


* - DENOTES WHICH POSITION RECIEVES I.C. SOCKET.

MO51-00873 - A032

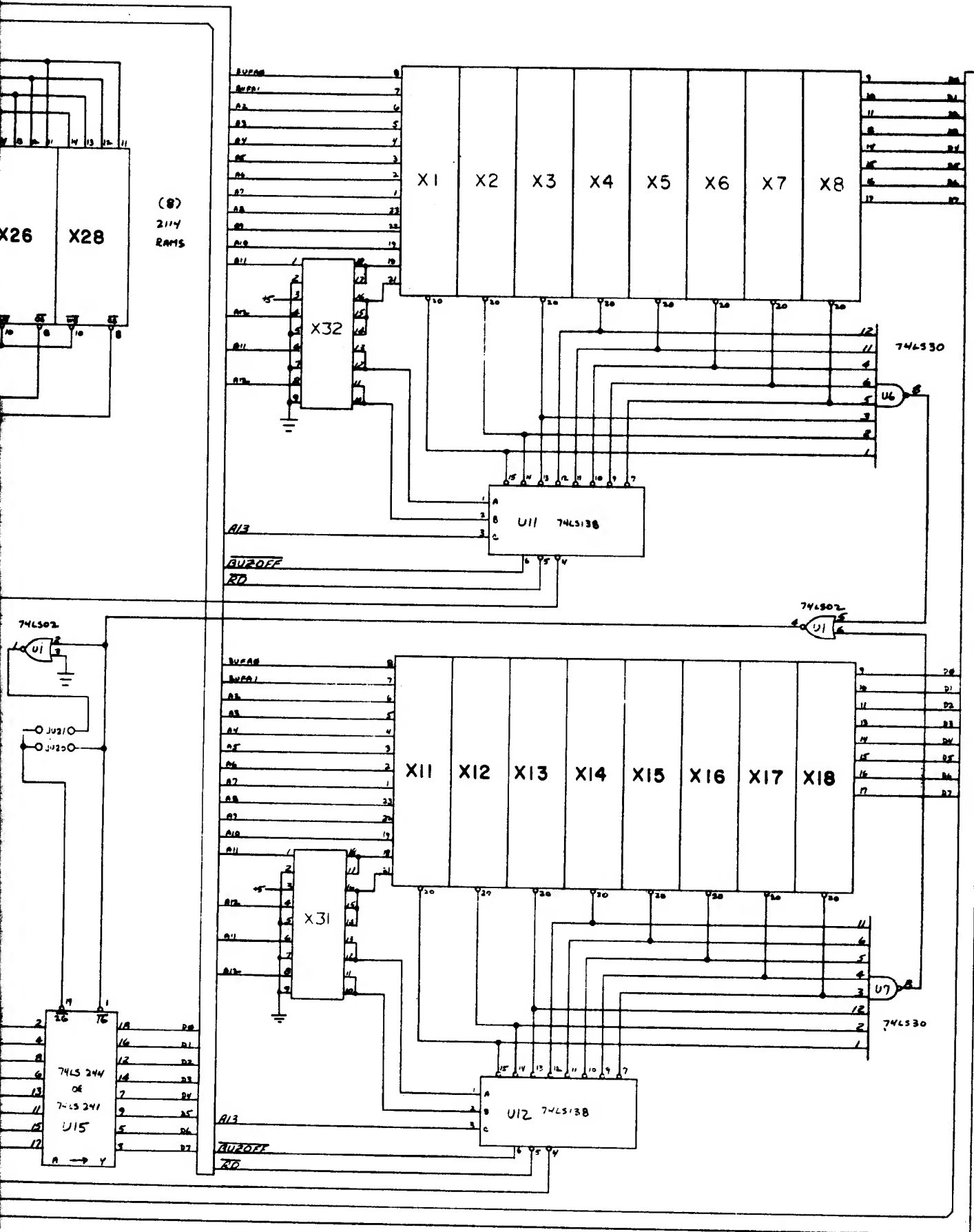
[illegible]

DOMESTIC



COMPONENT SIDE

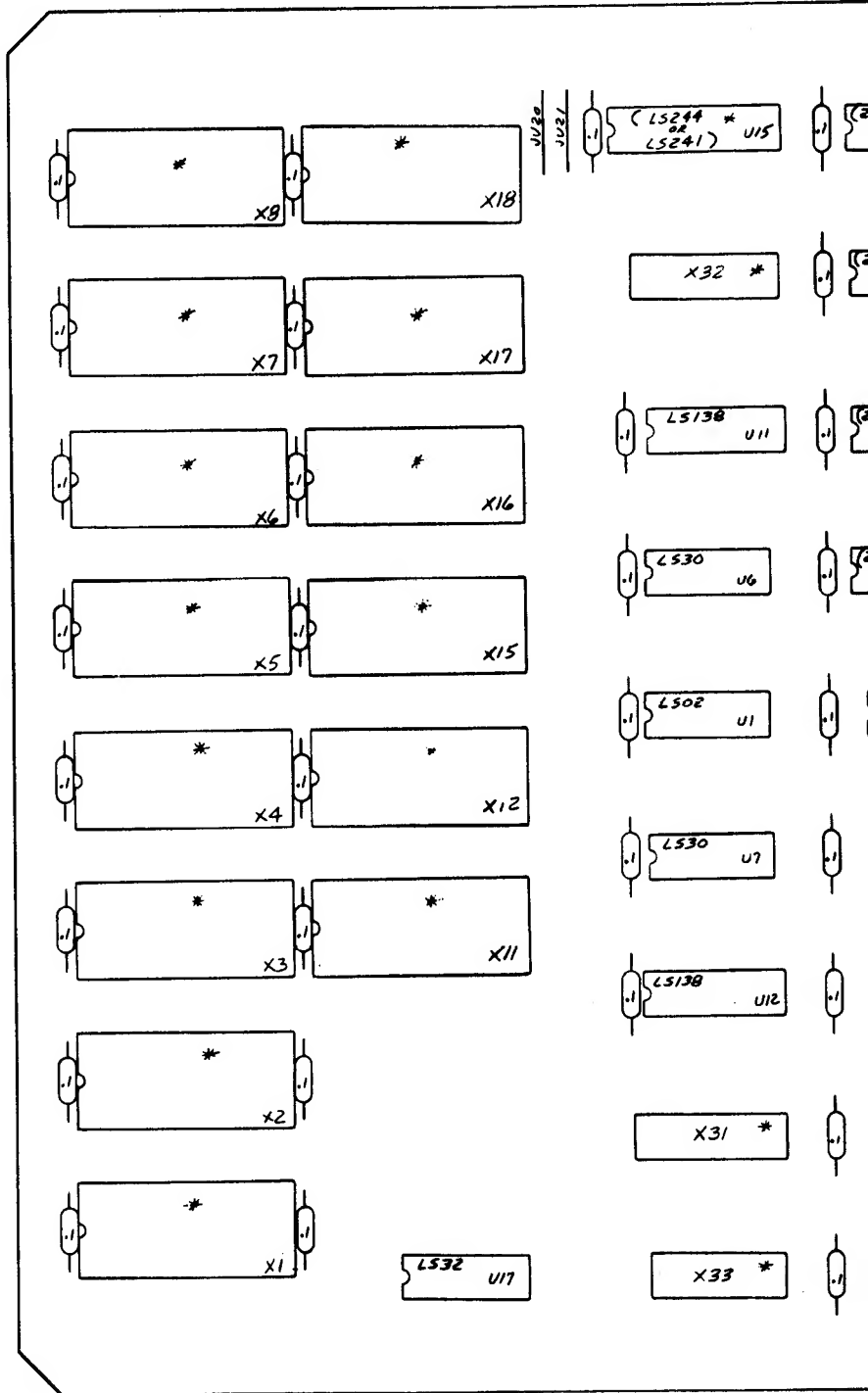




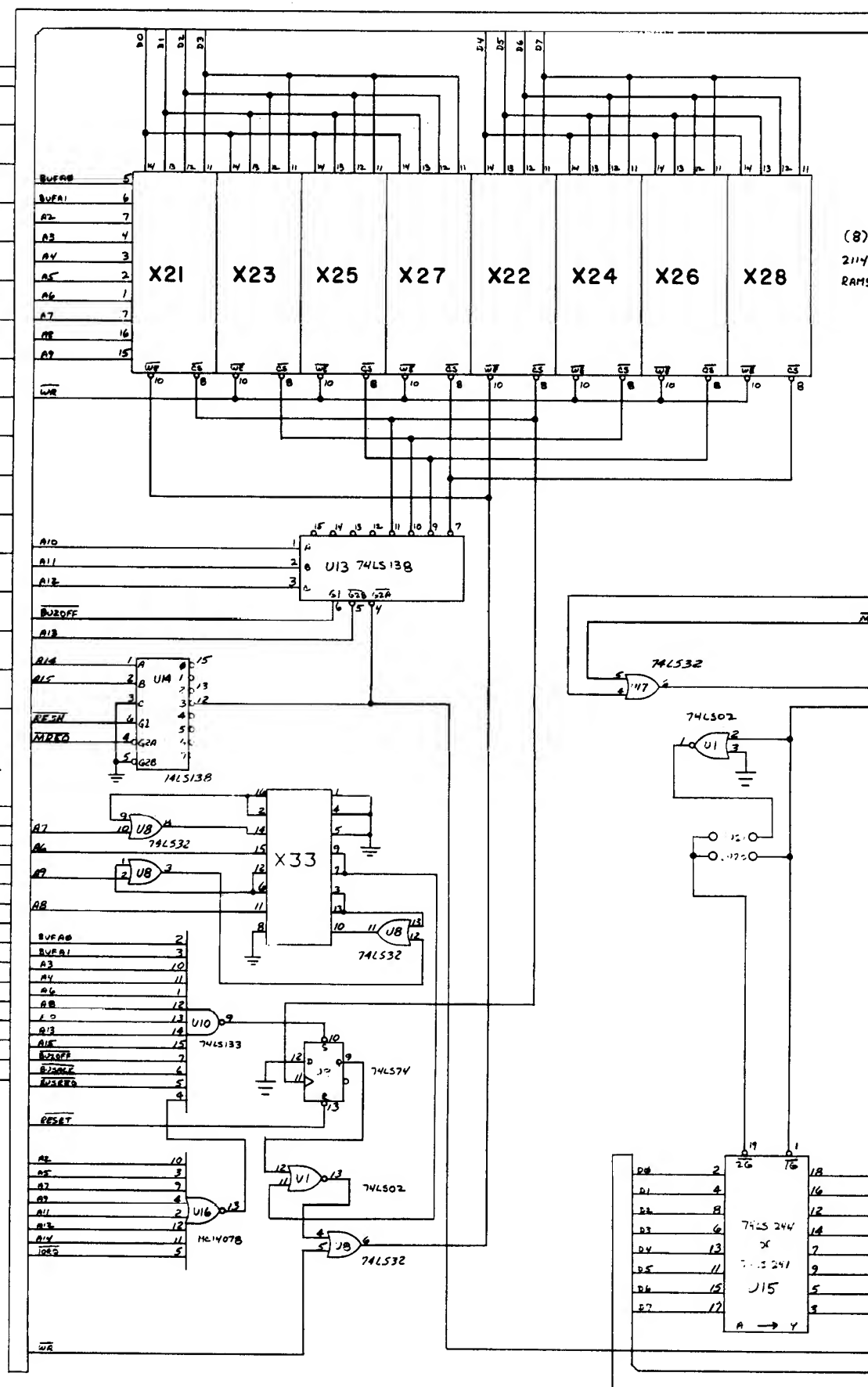
M051-00873-A033

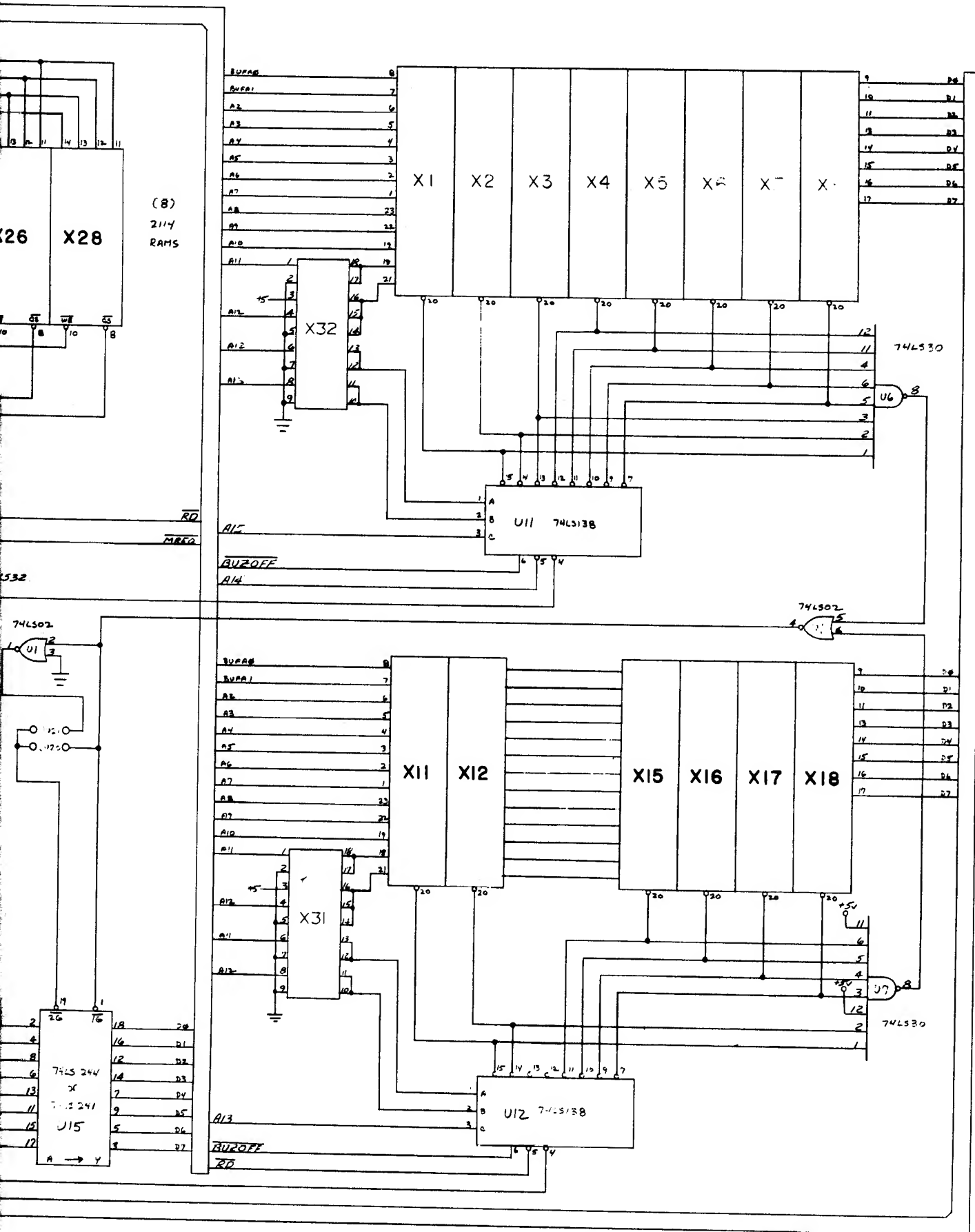
REV	DATE	DESIGNED BY	MIDWAY MFG. CO.
1	7-20-60	OTB	RAM / RAM CARD
2			GORE
3			A082-71364 - Rev

DOMESTIC



COMPONENT SIDE

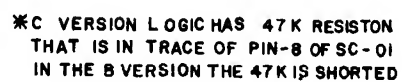


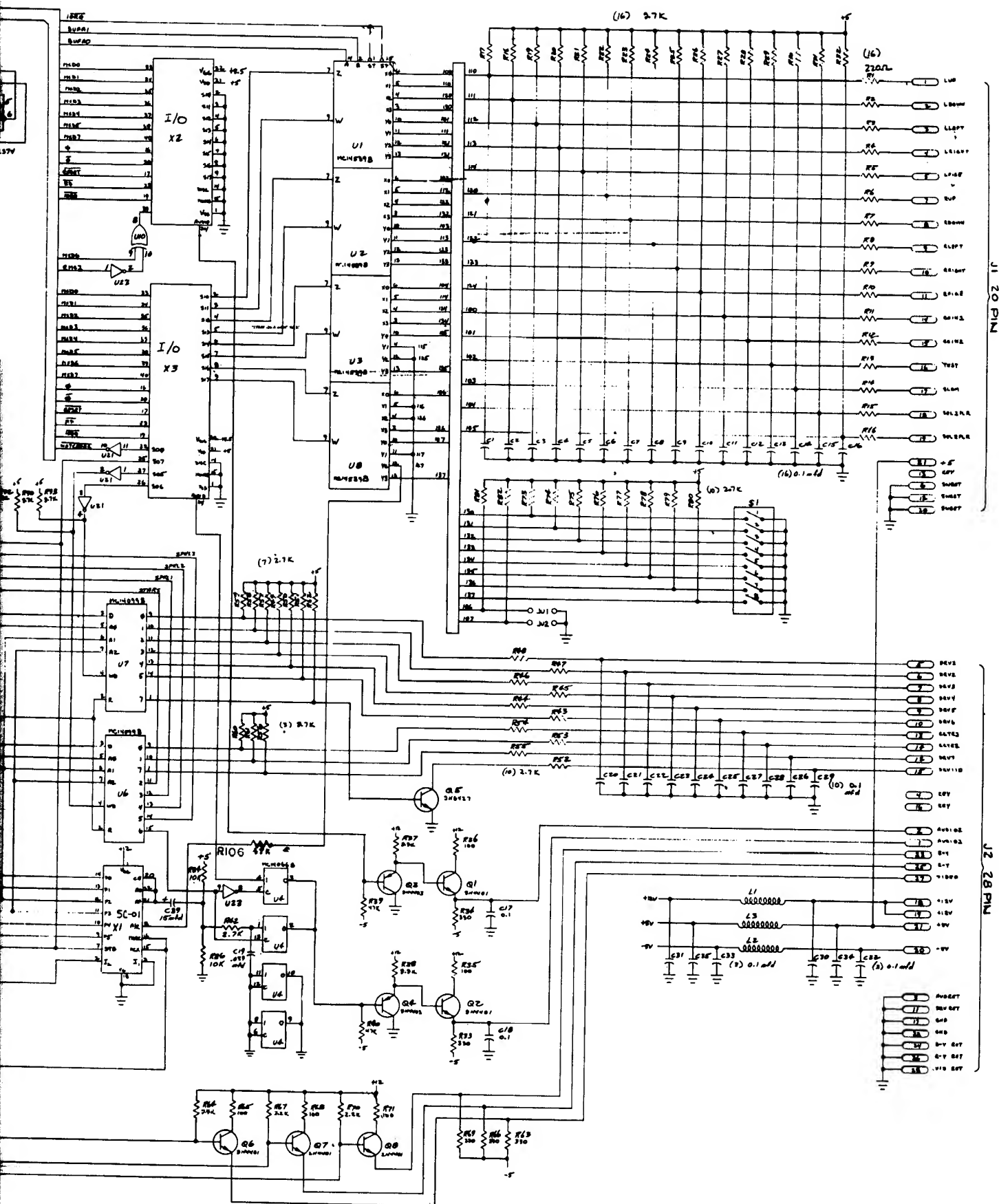


M051-00873-A034

SCALE	DATE	DESIGNED BY	MIDWAY MFG. CO.
NONE	7-20-80	OTD	
MATERIAL	FINISH	TITLE	ROM/RAM CARD (44K)
		FOR	CCRS
PROD. PACKAGE	10-10-80	NO	A082-91374-A000

FOREIGN

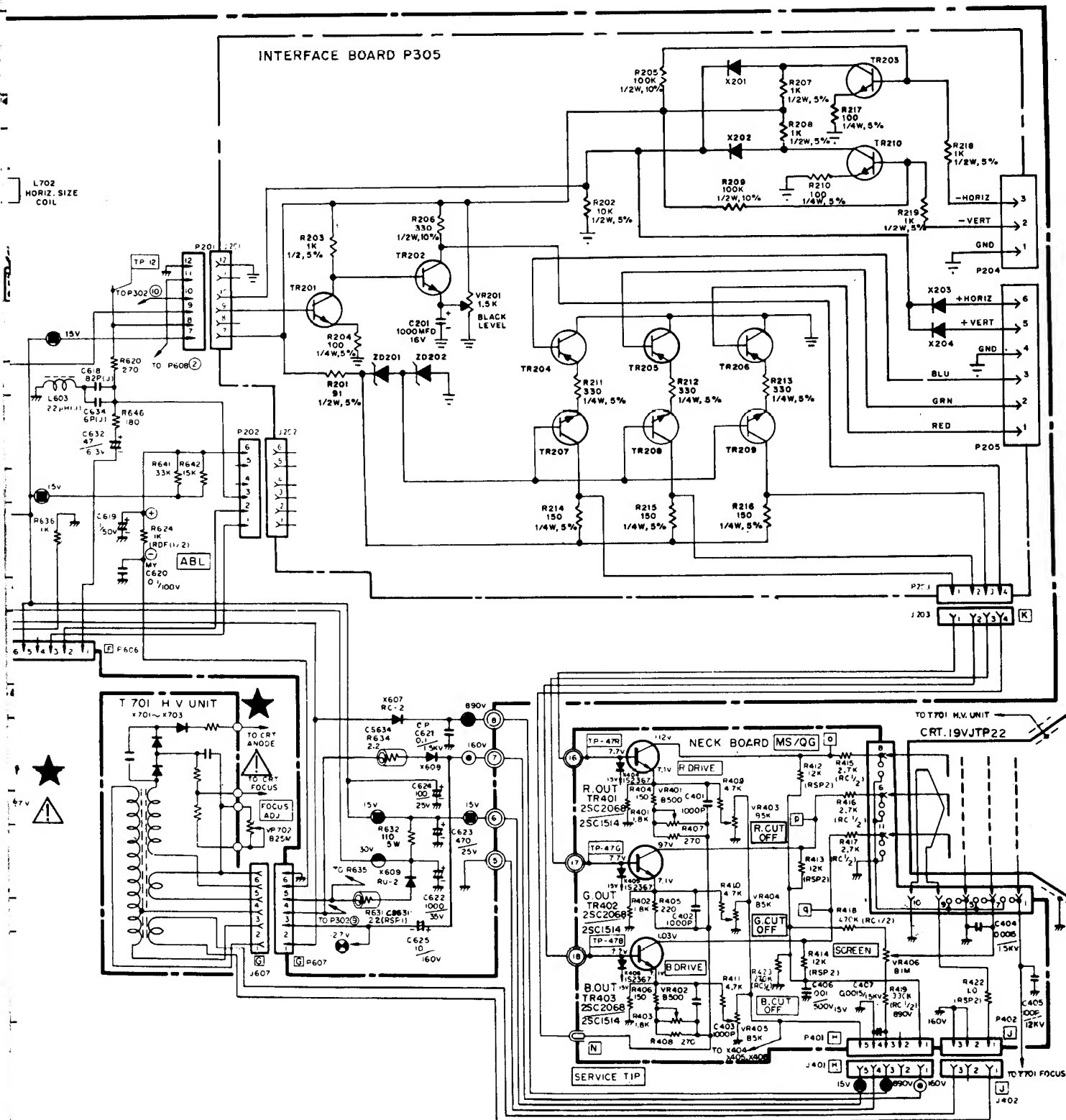




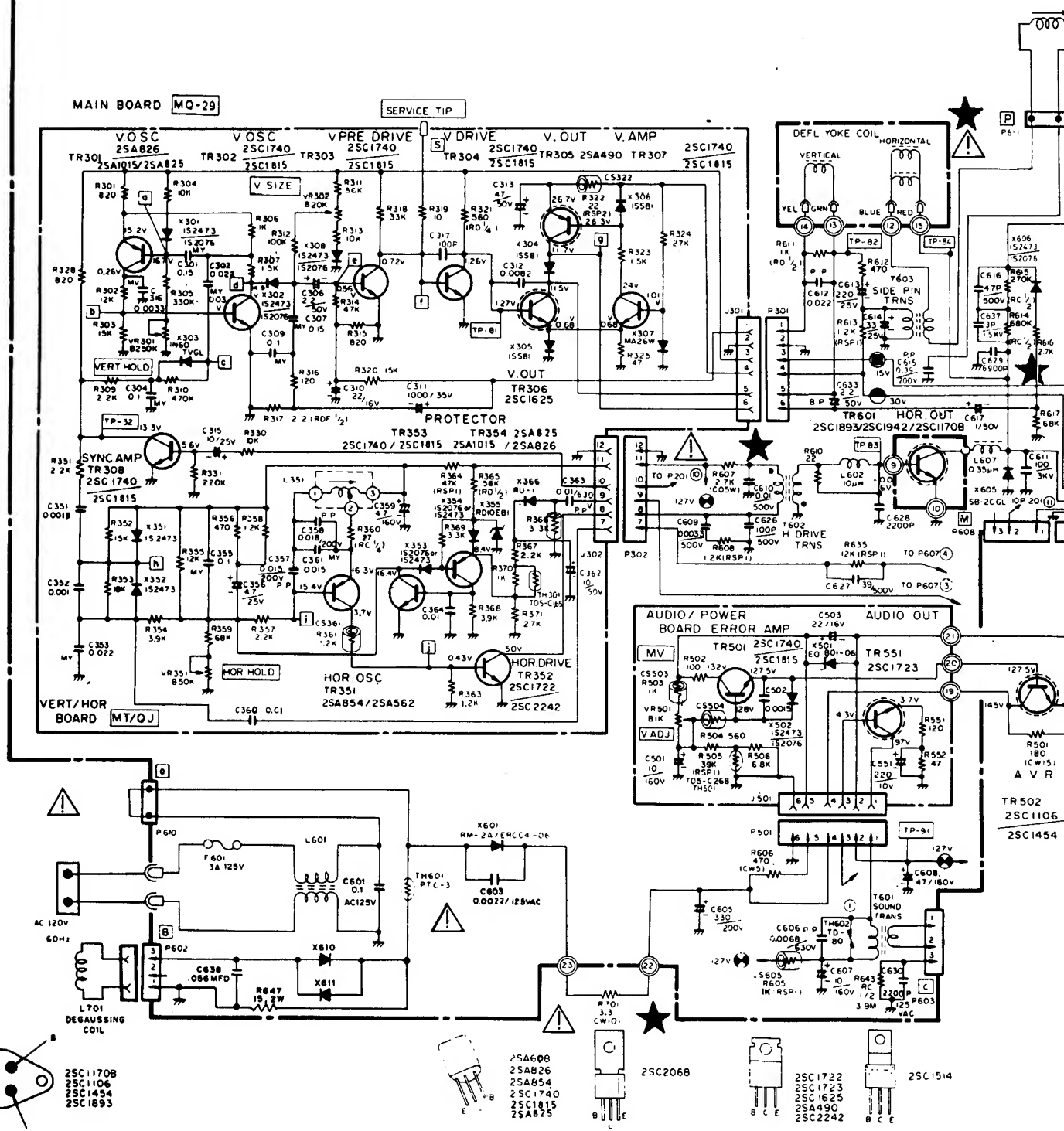
GORF GAME BOARD
A084-90708-C873

M051-00873-C024

OR SCHEMATIC DIAGRAM



K4606-5800



VERT/HOR BOARD (MT/QJ)

Ref. No.	Part No.	Description
RESISTORS		
R301	203X6500-628	820 Ohm, $\pm 5\%$, 1/8W Carbon
R302	203X6500-902	12k Ohm, $\pm 5\%$, 1/8W Carbon
R303	203X6500-927	15k Ohm, $\pm 5\%$, 1/8W Carbon
R304	203X6500-886	10k Ohm, $\pm 5\%$, 1/8W Carbon
R305	203X6501-241	330k Ohm, $\pm 5\%$, 1/8W Carbon
R306	203X6500-645	1k Ohm, $\pm 5\%$, 1/8W Carbon
R307	203X6500-689	1.5k Ohm, $\pm 5\%$, 1/8W Carbon
R309	203X6500-724	2.2k Ohm, $\pm 5\%$, 1/8W Carbon
R310	203X6501-285	470k Ohm, $\pm 5\%$, 1/8W Carbon
R311	203X6501-065	56k Ohm, $\pm 5\%$, 1/8W Carbon
R312	203X6501-126	100k Ohm, $\pm 5\%$, 1/8W Carbon
R313	203X6001-326	10k Ohm, $\pm 5\%$, 1/8W Carbon
R314	203X6501-044	47k Ohm, $\pm 5\%$, 1/8W Carbon
R315	203X6500-628	820 Ohm, $\pm 5\%$, 1/8W Carbon
R316	203X6500-420	120 Ohm, $\pm 5\%$, 1/8W Carbon
R317	203X6206-441	2.2 Ohm, $\pm 5\%$, 1/2W Carbon
R319	203X6500-169	100 Ohm, $\pm 5\%$, 1/8W Carbon
R320	203X6500-927	15k Ohm, $\pm 5\%$, 1/8W Carbon
R321	203X6700-509	560 Ohm, $\pm 5\%$, 1/2W Carbon
R322	203X9100-121	22 Ohm, $\pm 5\%$, 2W M.O.
R323	203X6500-689	1.5K Ohm, $\pm 5\%$, 1/8W Carbon
R324	203X6500-988	27k Ohm, $\pm 5\%$, 1/8W Carbon
R325	203X6500-326	47 Ohm, $\pm 5\%$, 1/8W Carbon
R328	203X6500-628	820 Ohm, $\pm 5\%$, 1/8W Carbon
R330	203X6500-886	10k Ohm, $\pm 5\%$, 1/8W Carbon
R331	203X6501-209	220k Ohm, $\pm 5\%$, 1/8W Carbon
R351	203X6500-724	2.2k Ohm, $\pm 5\%$, 1/8W Carbon
R352	203X6500-927	15k Ohm, $\pm 5\%$, 1/8W Carbon
R353	203X6500-944	18k Ohm, $\pm 5\%$, 1/8W Carbon
R354	203X6500-783	3.9k Ohm, $\pm 5\%$, 1/8W Carbon
R355	203X6500-902	12k Ohm, $\pm 5\%$, 1/8W Carbon
R356	203X6500-561	470 Ohm, $\pm 5\%$, 1/8W Carbon
R357	203X6500-724	2.2k Ohm, $\pm 5\%$, 1/8W Carbon
R358	203X6500-666	1.2k Ohm, $\pm 5\%$, 1/8W Carbon
R359	203X6501-088	68k Ohm, $\pm 5\%$, 1/8W Carbon
R360	203X5500-471	27 Ohm, $\pm 5\%$, 1/4W Comp.
R361	203X6000-998	1.2k Ohm, $\pm 5\%$, 1/8W Carbon
R363	203X6500-666	1.2k Ohm, $\pm 5\%$, 1/8W Carbon
R364	203X9014-988	47k Ohm, $\pm 5\%$, 1W M.O.
R365	203X6700-989	56k Ohm, $\pm 5\%$, 1/2W Carbon
R366	203X6001-148	3.3k Ohm, $\pm 5\%$, 1/8W Carbon
R367	340X2222-734	2.2k Ohm, $\pm 5\%$, 1/2W Carbon
R368	203X6500-785	3.9k Ohm, $\pm 5\%$, 1/8W Carbon
R369	203X6500-762	3.3k Ohm, $\pm 5\%$, 1/4W Carbon
R370	302X6100-961	1k Ohm, $\pm 5\%$, 1/4W Carbon
R371	203X6104-751	2.7k Ohm, $\pm 5\%$, 1/4W Carbon
VR301	204X2122-093	Varistor, 250K Ohm, Vert. Hold
VR302	204X2114-065	Varistor, 20K Ohm, Vert. Size
VR351	204X2114-059	Varistor, 50K Ohm, Hor. Hold

CAPACITORS

C301	203X1100-928	0.15 uF, 50V, $\pm 10\%$ Mylar
C302	203X1100-573	0.022 uF, 50V, $\pm 10\%$ Mylar
C304	203X1100-858	0.1 uF, 50V, $\pm 10\%$ Mylar
C306	203X0025-026	2.2 uF, 50V, Electrolytic
C307	203X1100-928	0.15 uF, 50V, $\pm 10\%$ Mylar
C309	203X1100-858	0.1 uF, 50V, $\pm 10\%$ Mylar
C310	203X0010-011	22 uF, 16V Electrolytic
C311	203X0020-099	1000 uF, 35V Electrolytic
C312	202X7000-469	0.0082 uF, 50V, $\pm 10\%$ Ceramic

POWER BOARD (MV)

RESISTORS

R501	204X1725-052	180 Ohm, $\pm 10\%$, 15W WW
R502	203X6000-608	100 Ohm, $\pm 5\%$, 1/8W Carbon
R503	203X6000-960	1k Ohm, $\pm 5\%$, 1/8W Carbon
R504	203X6000-879	560 Ohm, $\pm 5\%$, 1/8W Carbon
R505	203X9014-965	39k Ohm, $\pm 5\%$, 1W M.O.
R506	203X6500-842	6.8k Ohm, $\pm 5\%$, 1/8W Carbon
R551	203X6500-420	120 Ohm, $\pm 5\%$, 1/8W Carbon
VR501	204X2050-001	Varistor Vert. Adj.

CAPACITORS

C501	203X0040-020	10 uF, 160V Electrolytic
C502	202X7000-281	1500 pF, 50V, $\pm 10\%$ Ceramic

Ref. No.	Part No.	Description
CAPACITORS (CONT.)		
C313	203X0025-087	47 uF, 50V Electrolytic
C315	203X0015-082	10 uF, 25V Electrolytic
C316	203X1100-220	3300 uF, 50V, $\pm 10\%$ Mylar
C317	202X8000-616	100 pF, 50V, $\pm 10\%$ Ceramic
C351	202X7000-281	1500 pF, 50V, $\pm 10\%$ Ceramic
C352	202X7000-247	1000 pF, 50V, $\pm 10\%$ Ceramic
C353	203X1100-573	0.022 uF, 50V, $\pm 10\%$ Mylar
C355	203X1100-858	0.1 uF, 50V, $\pm 10\%$ Mylar
C356	203X0015-105	4.7 uF, 25V Electrolytic
C357	203X1201-013	0.015uF, 200V $\pm 10\%$ PP
C358	203X1201-034	0.018 uF, 200V, $\pm 10\%$ PP
C359	203X0040-013	4.7 uF, 160V Electrolytic
C360	202X7000-482	0.01 uF, 50V, $\pm 10\%$ Ceramic
C361	203X1100-509	0.015 uF, 50V, $\pm 10\%$ Mylar
C362	203X0025-058	10 uF, 50V Electrolytic
C363	203X1205-487	0.01 uF, 630V, $\pm 10\%$ PP
C364	202X7000-482	0.01 uF, 50V, $\pm 10\%$ Ceramic

SEMICONDUCTORS

TR301	200X4082-614	Transistor, 2SA826Q
TR302	200X3174-006	Transistor, 2SC1740Q
TR303	200X3174-006	Transistor, 2SA1740Q
TR304	200X3174-006	Transistor, 2SC1740Q
TR305	200X4049-081	Transistor, 2SA490YLBGLI
TR306	200X3162-538	Transistor, 2SC1625YLBGLI
TR307	200X3174-014	Transistor, 2SC1740R
TR308	200X3174-006	Transistor, 2SC1740Q
TR351	200X4085-415	Transistor, 2SA854Q
TR352	200X3172-208	Transistor, 2SC1722BKS
TR353	200X3174-006	Transistor, 2SC1740Q
TR354	200X4082-614	Transistor, 2SA826Q
X301	201X2010-144	Diode, (Si) IS2473-T72
X302	201X2010-144	Diode, (Si) IS2473-T72
X303	200X8000-026	Diode, (GE), IN60TVGL
X304	200X8010-165	Diode (Si) ISS81
X305	201X2010-165	Diode (Si) ISS81
X306	201X2010-165	Diode (Si) ISS81
X307	200X8010-102	Diode (Si) MA26W
X308	200X8010-094	Diode (Si) IS2473
X351	201X2010-144	Diode (Si) IS2473-T72
X352	201X2010-144	Diode (Si) IS2473-T72
X353	201X2010-144	Diode (Si) IS2473-T72
X354	201X2010-144	Diode (Si) IS2473-T72
X355	200X8220-851	Diode (Zener) RD10EBI
X366	200X8100-130	Diode (HS) RU-1 0.3 US

MISCELLANEOUS

J301	204X9300-958	Socket, 6 Pin
J302	204X9300-958	Socket, 6 Pin
P301	204X9601-195	Plug, 6 Pin
P302	204X9601-195	Plug, 6 Pin
TH301	201X0000-534	Thermistor

TRANSFORMERS & COILS

L351	201X5200-091	Coll, Horiz. Osc.
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SEMICONDUCTORS

TR501	200X3174-006	Transistor, 2SC1740Q
★ TR502	200X3145-404	Transistor, 2SC1454
TR551	200X3172-305	Transistor, 2SC1723
X501	201X2230-042	Diode, (Si) Zener EQB01-06V
X502	201X2010-144	Diode, (Si) IS2473-T72

MISCELLANEOUS

J501	204X9300-958	Socket, 6 Pin
P501	204X9601-195	Plug, 6 Pin
TH501	201X0000-618	Thermistor

NECK BOARD (MS/QG)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
RESISTORS					
R401	203X6500-709	1.8k Ohm \pm 5% 1/8W Carbon	C403	202X7000-247	1000 pF, 50V, 10% Ceramic
R402	203X6500-709	1.8k Ohm \pm 5% 1/8W Carbon	C404	202X7110-019	1500 pF, 2kV \pm 10% Ceramic
R403	203X6500-709	1.8k Ohm \pm 5% 1/8W Carbon	C405	202X7150-018	100 pF, 12kV, \pm 10% Ceramic
R404	203X6500-447	150 Ohm \pm 5% 1/8W Carbon	C406	202X7050-483	.01 uF, 500V, \pm 10% Ceramic
R405	203X6500-481	220 Ohm \pm 5% 1/8W Carbon	C407	202X7110-019	1500 pF, 2kV \pm 10% Ceramic
R406	203X6500-447	150 Ohm \pm 5% 1/8W Carbon	C408	202X8000-550	68 pF, 50V, \pm 10% Ceramic
R407	203X6500-508	270 Ohm \pm 5% 1/8W Carbon	C409	202X8000-550	68 pF, 50V, \pm 10% Ceramic
R408	203X6500-508	270 Ohm \pm 5% 1/8W Carbon	C410	202X8000-550	68 pF, 50V, \pm 10% Ceramic
R409	203X6500-800	4.7k Ohm \pm 5% 1/8W Carbon			
R410	203X6500-800	4.7k Ohm \pm 5% 1/8W Carbon			
R411	203X6500-800	4.7k Ohm \pm 5% 1/8W Carbon			
R412	203X9104-809	12k Ohm \pm 5% 2.0W Metal Oxide			
R413	203X9104-809	12k Ohm \pm 5% 2.0W Metal Oxide			
R414	203X9104-809	12k Ohm \pm 5% 2.0W Metal Oxide			
R415	203X5601-313	2.7k Ohm \pm 10% 1/2W Comp.	TR401	200X3206-800	Transistor, 2SC2068, 2SC1514 (R output)
R416	203X5601-313	2.7k Ohm \pm 10% 1/2W Comp.	TR402	200X3206-800	Transistor, 2SC2068, 2SC1514 (G output)
R417	203X5601-313	2.7k Ohm \pm 10% 1/2W Comp.	TR403	200X3206-800	Transistor, 2SC2068, 2SC1514 (B output)
R418	203X5602-254	470k Ohm \pm 10% 1/2W Comp.			
R419	203X5602-185	330k Ohm \pm 10% 1/2W Comp.			
R422	203X9105-117	1.0 Ohm \pm 10% 2W Metal Oxide			
R423	203X5102-155	270k Ohm \pm 5% 1/4W Carbon	X404	201X2100-126	Diode, IS2367 (protector)
VR401	204X2115-014	500 Ohm Varistor R Drive	X405	201X2100-126	Diode, IS2367 (protector)
VR402	204X2115-014	500 Ohm Varistor B Drive	X406	201X2100-126	Diode, IS2367 (protector)
VR403	204X2115-006	5k Ohm Varistor R Cutoff			
VR404	204X2115-006	5k Ohm Varistor G Cutoff			
VR405	204X2115-006	5k Ohm Varistor B Cutoff			
VR406	204X2000-025	1M Ohm Varistor Screen			

SEMICONDUCTORS

MISCELLANEOUS

CAPACITORS			J401	206X5003-729	Socket, 5 Pin
C401	202X7000-247	1000 pF, 50V, 10% Ceramic	J402	206X5003-983	Socket, 3 Pin
C402	202X7000-247	1000 pF, 50V, 10% Ceramic	P401	204X9600-329	Plug, 5-Pin
			P402	204X9600-254	Plug, 3 Pin

★ 297X2000-072 HIGH VOLTAGE ASSEMBLY (T701)

★ R701	204X1625-058	3.3 Ohm, \pm 10% 10W WW Resistor			
VR702	204X3901-125	Focus Control			
X701		Diode (SI HV) } Part of T701			
X702		Diode (SI HV) }			
X703		Diode (SI HV) }			

FINAL ASSEMBLY PARTS

★ 88X-0129-506	19VJTP22 Pix Tube
38A5554-000	Assy. Purity Shld/Degaussing
205X9800-256	Lateral/Purity Assembly
★ 202X1110-810	Yoke, Deflection
208X2000-946	CRT Socket
297X2000-072	HV Unit (T701)
6A0397	Plug, Line Cord
9A2753-003	Degaussing Coll (L701)

INTERFACE BOARD (P305) (MODEL 19K4606)

RESISTORS

R201	340X3910-934	91 Ohm, 5%, 1/2W Carbon
R203	340X3102-934	1k Ohm, 5%, 1/2W Carbon
R204	340X2101-934	100 Ohm, 5%, 1/4W Carbon
R206	340X3331-944	330 Ohm, 10%, 1/2W Carbon
R207	340X3102-934	1k Ohm, 5%, 1/2W Carbon
R208	340X2152-934	1.5k Ohm, 5%, 1/4W Carbon
R209	340X2101-934	100 Ohm, 5%, 1/4W Carbon
R210	340X3102-934	1k Ohm, 5%, 1/2W Carbon
R211	340X2331-934	330 Ohm, 5%, 1/4W Carbon
R212	340X2331-934	330 Ohm, 5%, 1/4W Carbon
R213	340X2331-934	330 Ohm, 5%, 1/4W Carbon
R214	340X2201-934	200 Ohm, 5%, 1/4W Carbon
R215	340X2201-934	200 Ohm, 5%, 1/4W Carbon
R216	340X2201-934	200 Ohm, 5%, 1/4W Carbon
VR201	40X0590-017	1.5k Ohm, Black Level Control

CAPACITORS

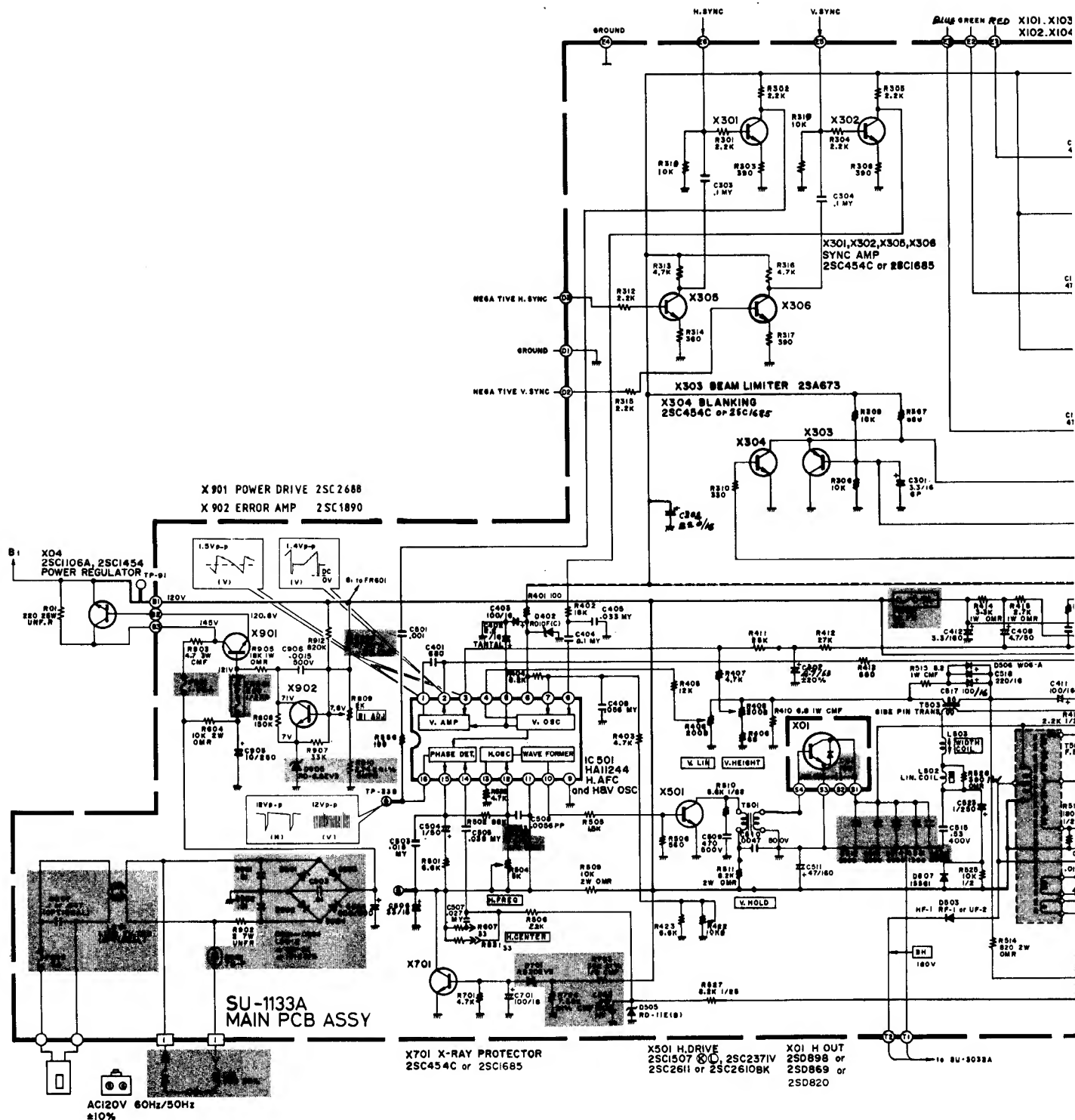
C201	45X0524-038	1000 uF, 16V Electrolytic
------	-------------	---------------------------

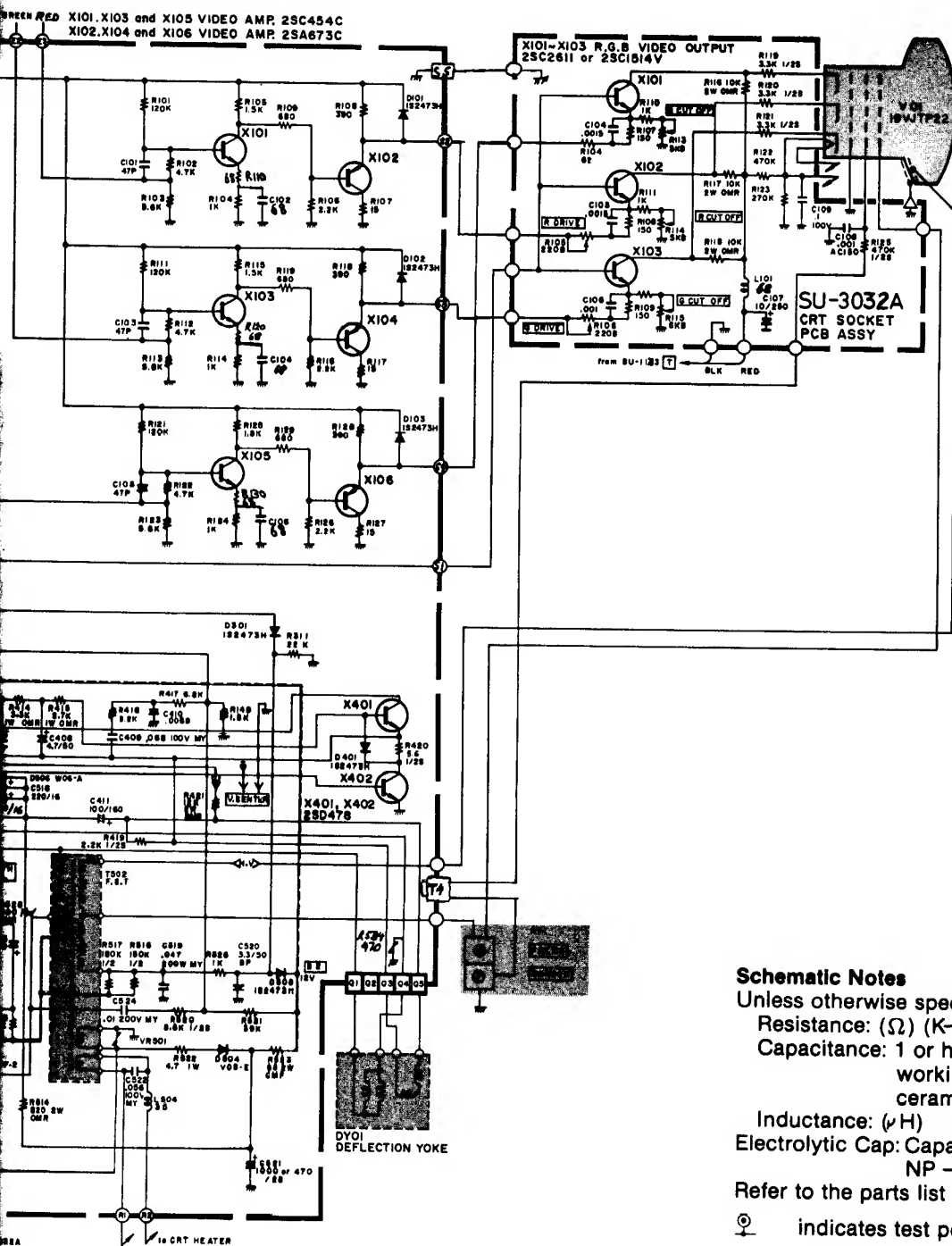
SEMICONDUCTORS

TR201	86X0121-001	Transistor (NPN)
TR202	86X0121-001	Transistor (NPN)
TR203	86X0121-001	Transistor (NPN)
TR204	86X0066-001	Transistor (PNP)
TR205	86X0066-001	Transistor (PNP)
TR206	86X0066-001	Transistor (PNP)
TR207	86X0121-001	Transistor (NPN)
TR208	86X0121-001	Transistor (NPN)
TR209	86X0121-001	Transistor (NPN)
ZD201	66X0040-018	Diode, Zener, 6.8v, 5%, 0.5W
ZD202	66X0040-019	Diode, Zener, 3.9v, 5%, 0.5W

MISCELLANEOUS

J201	204X9300-958	Socket, 6 Pin
J202	204X9300-958	Socket, 6 Pin
J203	206X5019-207	Socket, 4 Pin
P201	204X9601-195	Plug, 6 Pin
P202	204X9601-195	Plug, 6 Pin
P203	204X9600-845	Plug, 4 Pin
P205	6A0393-006	Plug, 6 Pin





Schematic Notes

Unless otherwise specified

Resistance: (Ω) (K \rightarrow K Ω , M \rightarrow M Ω), 1/4 (W) carbon resistor

Capacitance: 1 or higher \rightarrow (pF), less than 1 \rightarrow (μ F)

working voltage \rightarrow 50 (V)

ceramic capacitor

Inductance: (μ H)

Electrolytic Cap: Capacitance Value (μ F)/working voltage (V),

NP \rightarrow non-polar (or bipolar) electrolytic cap.

Refer to the parts list for additional component information.

\odot indicates test point connection

\perp indicates chassis ground unless otherwise specified

Hz indicates cycles per second

For **safety** purposes (and continuing reliability)

\triangle replace all components marked with safety symbol with identical type.

NOTE: FR \rightarrow fusible resistor (\rightarrow )

00-4147-04
G07-CB0

Parts identification on circuit boards:

e.g. SU1126A (R107 = R1107)

SU3030A (R113 = R3113)

REPLACEMENT PARTS LIST - ELECTROHOME 19" MONITOR

Components identified by the Δ symbol in the PARTS LIST and on the Schematic have special characteristics important to safety.

DO NOT degrade the safety of the set through improper servicing.

Abbreviations for Resistors and Capacitors

Resistor

C R	: Carbon Resistor
Comp. R	: Composition Resistor
OM R	: Oxide Metal Film Resistor
V R	: Variable Resistor
MF R	: Metal Film Resistor
CMF R	: Coating Metal Film Resistor
UNF R	: Nonflammable Resistor
F R	: Fusible Resistor

Capacitor

C Cap.	: Ceramic Capacitor
M Cap	: Mylar Capacitor
E Cap.	: Electrolytic Capacitor
BP E Cap.	: Bi-Polar (or Non-Polar) Electrolytic Capacitor
MM Cap.	: Metalized Mylar Capacitor
PP Cap.	: Polypropylene Capacitor
MPP Cap.	: Metalized PP Capacitor
PS Cap	: Polystyrol Capacitor
Tan. Cap.	: Tantal Capacitor

NOTE: When ordering replacement parts please specify the part number as shown in this list including part name, and model number. Complete information will help expedite the order.

Use of substitute replacement parts which do not have the same safety characteristics as specified, may create shock, fire or other hazards. For maximum reliability and performance, all parts should be replaced by those having identical specifications.

SERVICE REPLACEMENT PARTS LIST

Symbol	Description	Part Number
	Main P.C.B. Ass'y	SU-1133A
	CRT Socket P.C.B. Ass'y	SU-3032A
	Purity Shield Ass'y	07-220083-03

Outside of the P.C.B. Ass'y

Symbol	Description	Part Number
△	Picture Tube 19"	17-7198-03
△	△Deflection Yoke	A29779-D = 21-141-01
△	PC Magnet	A75034-B = 29-32-01
△	△Flyback Transf.	A29951-B
△	△HVR	A46600-A
R05	UNF Resistor 220 Ω , 25W K	QRF258K-221
C04	C Capacitor 150pF, AC1.5KV	QCZ0101-005
X01	Si. Transistor	2SD870
X02	Si. Transistor	2SC1106A
SC	Screw #8- $\frac{3}{8}$	31-610818-06
SC	Screw $\frac{1}{4}$ x $\frac{3}{4}$ Pix Tube Mtg. (4)	31-601418-12
WA	Pyramidal Lock Washer (4)	33-255-01
	Nut Retainer, Pix Tube Mtg. (4)	33-494-01
	Clip — P.C.B. Support	33-629-02
	Standoff	33-670-010R-02
	Wire Terminal (Gnd. Strap)	34-228-03
	Terminal Lug (Gnd.)	34-33-04
	Groundstrap Assy.	34-574-02
	Grounding Spring	35-212-03
	Wire Hook (Gnd. Strap)	35-3053-02
	Purity Shield Holddown Clamp	35-2348-01
	Support Brkt. RH	35-3890-01
	Support Brkt. LH	35-3890-02
	Chassis Base	38-449-02
	Yoke Wedge (3)	39-1233-01

Purity Shield Ass'y. Parts List

Symbol	Description	Part Number
D911, D912	Degaussing Coil	21-1007-30
	Rectifier 1 Amp 600V (2)	28-22-27
	Pin Terminal (2)	34-708-01
	Pin Terminal Housing	34-709-01
	Purity Shield (2 pcs.)	35-3847-01
	Purity Shield (2 pcs.)	35-3847-02
C911	Capacitor 100nF 10% 400V	48-171544-62
R921	Resistor, Wirewound 33 Ω , 4W	42-113301-03
	Fire Retardent Term. Strip 4 Lug	34-492-09

CRT Socket P.C.B. Ass'y (SU-3032A) Parts List**Resistors**

Symbol	Description	Part Number
R3105	V R 200	QVZ3234-022
R3106	V R 200	QVZ3234-022
R3113	V R 5K	QVZ3234-053
R3114	V R 5K	QVZ3234-053
R3115	V R 5K	QVZ3234-053
R3116	OM R 10K Ω 2W J	QRG029J-103
R3117	OM R 10K Ω 2W J	QRG029J-103
R3118	OM R 10K Ω 2W J	QRG029J-103
R3119	Comp. R 3.3K Ω $\frac{1}{2}$ W K	QRZ0039-332
R3120	Comp. R 3.3K Ω $\frac{1}{2}$ W K	QRZ0039-332
C3121	Comp. R 3.3K Ω $\frac{1}{2}$ W K	QRZ0039-332

Capacitors

Symbol	Description	Part Number
C3107	E Cap. 10uF 250V A	QEW53EA-106
C3108	C Cap. 1000pF DC1400V P	QCZ9001-102M

Coils

Symbol	Description	Part Number
L3101	Peaking Coil	QQL043K-101

Semiconductors**Symbol**

X3101
X3102
X3103

Description

Si. Transistor
Si. Transistor
Si. Transistor

Part Number

2SC1514VC
2SC1514VC
2SC1514VC

Miscellaneous**Symbol**

△

Description

△CRT Socket

Part Number

A76068

Main PCB Ass'y (SU-1133A) Parts List**Resistors****Symbol**

R1406
R1408
R1410
R1414
R1415
R1421
R1422
△FR1401
△R1503
R1504
R1509
R1512
R1514
R1515
R1522
R1523
R1528
R1534
VR1501
△R1703
△R1704
△R1901
R1902
R1903
R1904
R1905
△Q1908
△R1909
R1910
△FR1901

Description

V R 200Ω
V R 200Ω
CMF R 6.8Ω1W J
OM R 3.3KΩ1W J
OM R 2.7KΩ1W J
OM R 12KΩ2W J
V R 10KΩ
△F R 68Ω2W K
△CMF R 11.8KΩ¼W +1%
V R 5KΩ
OM R 10KΩ2W J
OM R 8.2KΩ2W J
OM R 820Ω2W J
CMF R 8.2Ω1W J
CMF R 4.7Ω1W J
OM R 68Ω2W J
OM R 390Ω1W J
ZN R
ZN R
△CMF R 39Ω½W +1%
△CMF R 7.68KΩ¼W +1%
△Posistor
UNF R 2Ω7W K
CMF R 4.7Ω3W J
OM R 10KΩ2W J
OM R 18KΩ1W J
△CMF R 47Ω½W +1%
V R 2KΩ
△CMF R 2.74KΩ¼W +1%
△F R 220Ω½W K

Part Number

QVZ3230-002
QVZ3230-002
QRX019J-6R8
QRG019J-332
QRG019J-272
QRG026J-123Z
QVZ3230-014
QRH024K-680M
QVR142F-1182
QVZ3230-053
QRG026J-103Z
QRG026J-822Z
QRG026J-821Z
QRX019J-8R2
QRX019J-4R7
QRG026J-680Z
QRG019J-391
ERZ-C05ZK471
ERZ-C05DK271
QVR122F-3902
QVR142F-7681
A75414
QRF076K-2R0
QRX039J-4R7
QRG026J-103Z
QRG019J-183
QVR122F-470Z
QVP5A0B-023E
QVR142F-274I
QRH124K-221M

Capacitors**Symbol**

C1301
C1402
C1407
C1411
C1412
C1508
△C1512
△C1513
△C1514
C1515
C1520
C1523
C1524
△C1531
△C1532
C1904
C1905

Description

BPE Cap. 3.3uF 50V A
Tan. Cap. 2.2uF 16V K
E Cap. 4.7uF 6.3V A
E Cap. 100uF 160V A
E Cap. 3.3uF 160V A
PP Cap. 5600uF 50V J
△PP Cap. 2000pF DC1500V J
△PP Cap. 2000pF DC1500V J
△PP Cap. 2000pF DC1500V J
PP Cap. 0.53uF DC1200V J
BPE Cap. 3.3uF 50V A
E Cap. 1uF 160V A
M Cap. 0.1uF 200V K
△PP Cap. 2000pF DC1500V J
△PP Cap. 1500pF DC1500V J
E Cap.
E Cap. 10uF 250V A

Part Number

QEN61HA-335Z
QEE51CK-225B
QEW51JA-475
QEW52CA-107
QEW52CA-335
QFP31HJ-562
QFZ0082-202
QFZ0082-202
QFZ0082-202
QFZ0067-534
QEN61HA-335Z
QEW62CA-105Z
QFM720K-104M
QFZ0082-202
QFZ0082-152
QEY0034-001
QEW52EA-106

Coils
Symbol
 L1502
 L1503
 L1504

Description
 Linarity Coil
 Width Coil
 Heater Choke

Part Number
 A39835
 C30380-A
 C30445-A

Transformers
Symbol
 T1501
 T1503

Description
 Hor. Drive Transf.
 Side Pin Transf.

Part Number
 A46022-BM
 C39050-A

Semiconductors
Symbol
 IC1501

Description
 IC

Part Number
 HA11244

X1101
 X1102
 X1103
 X1104
 X1105
 X1106
 X1301
 X1302
 X1303
 X1304
 X1305
 X1401
 X1402
 X1501
 X1901
 X1902

Si. Transistor
 Si. Transistor
 Si. Transistor
 Si. Transistor
 Si. Transistor
 Si. Transistor
 Si. Transistor
 Si. Transistor
 Si. Transistor
 Si. Transistor
 Si. Transistor
 Si. Transistor
 Si. Transistor
 Si. Transistor
 Si. Transistor

2SC1685(R)
 2SA673(C)
 2SC1685(R)
 2SA673(C)
 2SC1685(R)
 2SA673(C)
 2SC1685(R)
 2SC1685(R)
 2SA673(C)
 2SC1685(R)
 2SC1685(R)
 2SD478
 2SD478
 2SC2610BK
 2SC2688 (K.L.M.)
 2SC1890A (E.F.)

D1101
 D1102
 D1103
 D1301
 D1401
 D1402

Si. Diode
 Si. Diode
 Si. Diode
 Si. Diode
 Si. Diode
 Zener Diode

W06A
 W06A
 W06A
 1SZ473H
 1SZ473H
 RD10F(C)

D1503
 D1504
 D1505
 D1506
 D1507
 D1508

Si. Diode
 Si. Diode
 Zener Diode
 Si. Diode
 Si. Diode
 Si. Diode

HF-1
 V09E
 RD11E(B)
 W06A
 1SS81
 1SZ473H

△D1701
 △D1901
 △D1902
 △D1903
 △D1904
 △D1905

△Zener Diode
 △Si. Diode
 △Si. Diode
 △Si. Diode
 △Si. Diode
 △Zener Diode

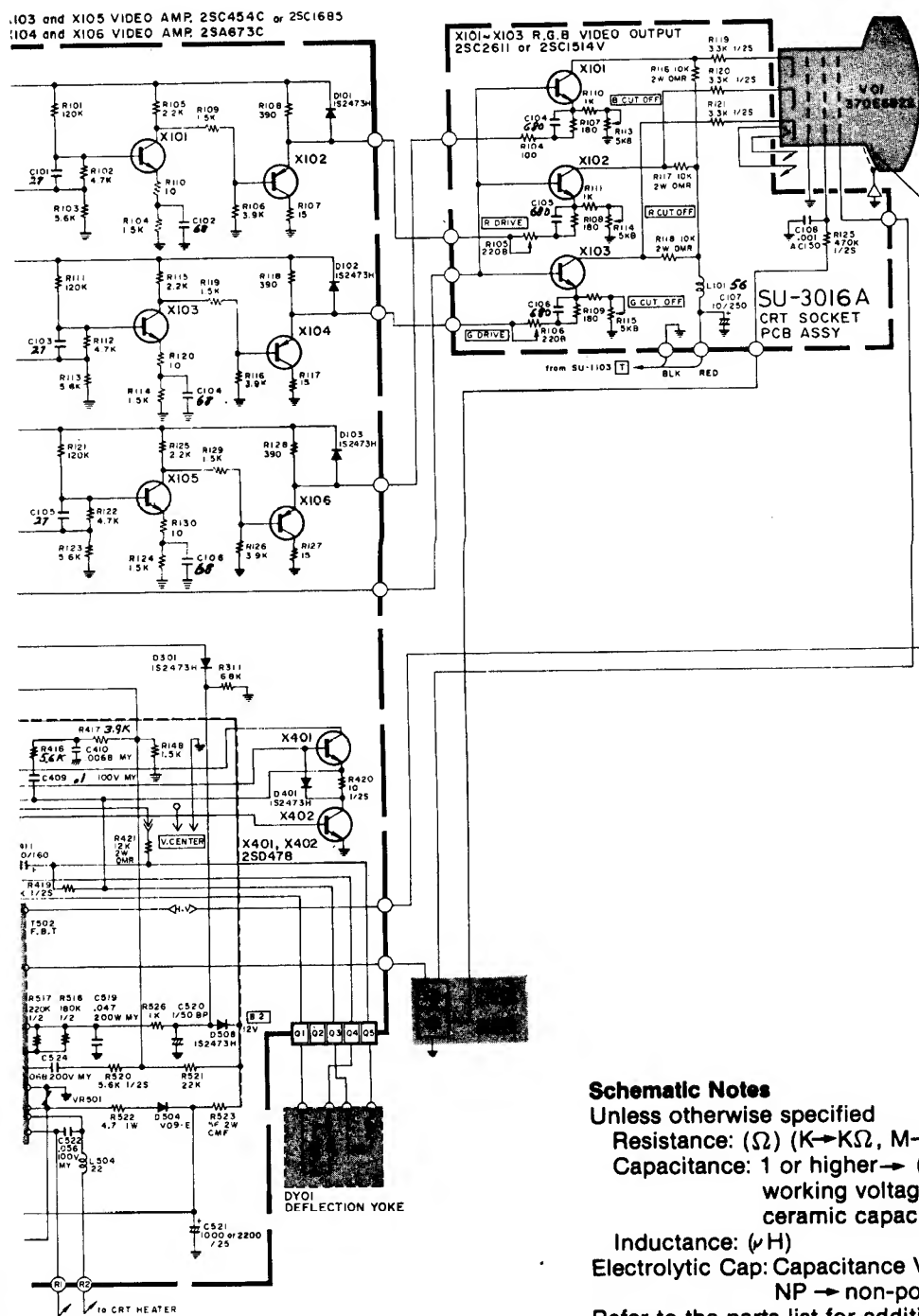
RD20EV2
 1S1887A
 1S1887A
 1S1887A
 1S1887A
 RD6.8EV3

Miscellaneous
Symbol
 △F1901
 △F1902

Description
 △Fuse 1.25A
 △UL Fuse 3A

Part Number
 QMF53U1-1R25S
 QMF66U1-3R0S

X103 and X105 VIDEO AMP, 25C454C or 25C1685
X104 and X106 VIDEO AMP, 25A673C



Schematic Notes

Unless otherwise specified

Resistance: (Ω) (K \rightarrow K Ω , M \rightarrow M Ω), 1/4 (W) carbon resistor

Capacitance: 1 or higher \rightarrow (pF), less than 1 \rightarrow (μ F)

working voltage \rightarrow 50 (V)

ceramic capacitor

Inductance: (μ H)

Electrolytic Cap: Capacitance Value (μ F)/working voltage (V),

NP \rightarrow non-polar (or bipolar) electrolytic cap.

Refer to the parts list for additional component information.

\odot indicates test point connection

\perp indicates chassis ground unless otherwise specified

Hz indicates cycles per second

For **safety** purposes (and continuing reliability)

\triangle replace all components marked with safety symbol with identical type.

NOTE: FR \rightarrow fusible resistor ($\text{---}\text{---}\text{---}$)

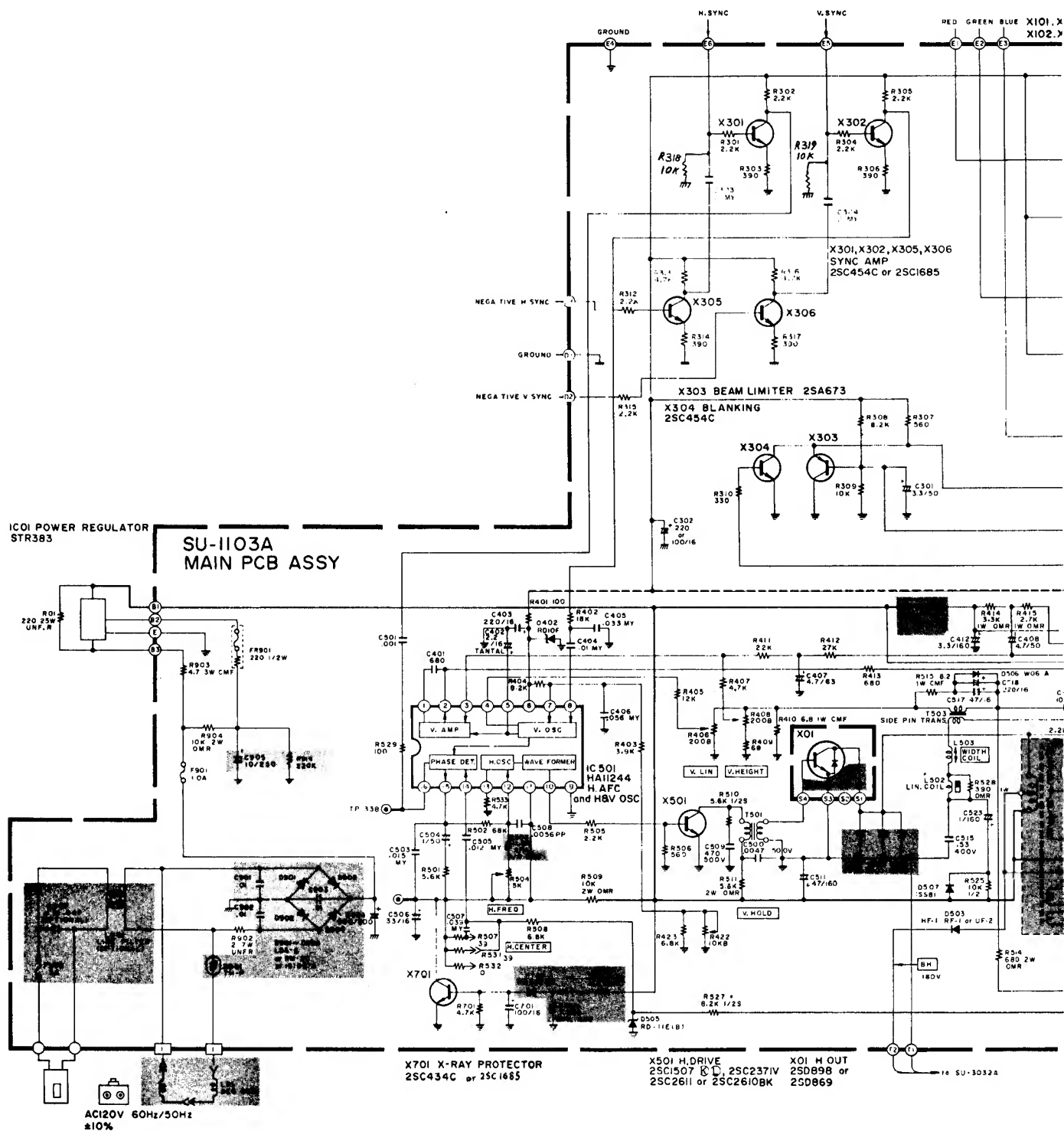
G07-FBO

00-4147-03

Parts identification on circuit boards:

e.g. SU1126A (R107 = R1107)

SU3030A (R113 = R3113)



REPLACEMENT PARTS LIST - ELECTROHOME 13" MONITOR

Components identified by the Δ symbol in the PARTS LIST and on the Schematic have special characteristics important to safety.

DO NOT degrade the safety of the set through improper servicing.

Abbreviations for Resistors and Capacitors

Resistor

C R	: Carbon Resistor
Comp. R	: Composition Resistor
OM R	: Oxide Metal Film Resistor
V R	: Variable Resistor
MF R	: Metal Film Resistor
CMF R	: Coating Metal Film Resistor
UNF R	: Nonflammable Resistor
F R	: Fusible Resistor

Capacitor

C Cap.	: Ceramic Capacitor
M Cap	: Mylar Capacitor
E Cap.	: Electrolytic Capacitor
BP E Cap.	: Bi-Polar (or Non-Polar) Electrolytic Capacitor
MM Cap.	: Metalized Mylar Capacitor
PP Cap.	: Polypropylene Capacitor
MPP Cap.	: Metalized PP Capacitor
PS Cap	: Polystyrol Capacitor
Tan. Cap.	: Tantal Capacitor

NOTE: When ordering replacement parts please specify the part number as shown in this list including part name, and model number. Complete information will help expedite the order.

Use of substitute replacement parts which do not have the same safety characteristics as specified, may create shock, fire or other hazards. For maximum reliability and performance, all parts should be replaced by those having identical specifications.

Symbol	Description	Part Number
	Main P.C.B. Ass'y	SU-1103A
	CRT Socket P.C.B. Ass'y	SU-3016A
Outside of the P.C.B. Ass'y		
Symbol	Description	Part Number
Δ V01	Δ Picture Tube	370ESB22(E)
Δ DY01	Δ Deflection Yoke	C29123-V
	PC Magnet	A76366-A
	Wedge	C30006
	Δ Flyback Transf.	A19183-A
Δ R11	Δ Focus V R	A46606-A
Δ R05	UNF Resistor 220 Ω , 25W. K	QRF258K-221
Δ C04	Δ C Capacitor 150 pF, AC1.5KV	QCZ0101-005
X01	Si. Transistor	2SD869
IC01	IC Regulator	STR383
L01	Degaussing Coil	21-1007-31
	Degaussing Coil Pin Terminal (2)	34-708-01
	Degaussing Coil Pin Terminal Housing	34-709-01
	Groundstrap Ass'y.	34-697-04
	Groundstrap Wire Terminal	34-228-03
	Groundstrap Spring (2)	35-3560-01
BR	Support Bracket RH	35-3919-01
BR	Support Bracket LH	35-3919-02
SC	SCREW 10- $\frac{1}{2}$ Pix Tube Mtg. (4)	31-631018-08
WA	Pyramidal Lockwasher (4)	33-255-01
	Clip P.C.B. Support (2)	33-629-02
	Ground Lug	34-33-04
CH	Chassis Base	38-452-01

Main P.C.B. Ass'y (SU-1103A) Parts List

Resistors

Symbol	Description	Part Number
R1406	V R 200 Ω	QVZ3230-022
R1408	V R 200 Ω	QVZ3230-022
R1410	CMF R 6.8 Ω 1W J	QRX019J-6R8
R1414	OM R 3.3K Ω 1W J	QRG019J-332
R1415	OM R 2.7K Ω 1W J	QRG019J-272
R1421	OM R 12K Ω 2W J	QRG029J-123
R1422	V R 10K Ω	QVZ3224-014H
Δ FR1401	Δ F R 68 Ω 2W K	QRH024K-680M
Δ R1503	Δ CMF R 11.8K Ω $\frac{1}{4}$ W +1%	QRV142F-1182
R1504	V R 5K Ω	QVZ3230-053
R1509	OM R 10K Ω 2W J	QRG029J-103
R1511	OM R 5.6K Ω 2W J	QRG029J-562
R1514	OM R 680 Ω 2W J	QRG029J-681
R1515	CMF R 8.2 Ω 1W J	QRX019J-8R2
R1522	CMF R 4.7 Ω 1W J	QRX019J-4R7
R1523	OM R 56 Ω 2W J	ORG029J-560
R1528	OM R 390 Ω 1W J	ORG019J-391
R1534	ZN R	ERZ-C05ZK471
VR1501	ZN R	ERZ-C05DK271
Δ R1703	Δ CMF R 39K Ω $\frac{1}{2}$ W +1%	QRV122F-3902
Δ R1704	Δ CMF R 7.68K Ω $\frac{1}{4}$ W +1%	QRV142F-7681
Δ R1901	Δ Posistor	A75414
R1902	UNF R 2 Ω 7W K	QRF076K-2R0
R1903	CMF R 5.6 Ω 3W J	QRX039J-5R6
R1904	OM R 10K Ω 2W J	QRG026J-103Z
Δ FR1901	Δ F R 220 Ω $\frac{1}{2}$ W K	QRH124K-221M

Capacitors

Symbol	Description	Part Number
C1402	Tan. Cap. 2.2uF 16V K	QEE51CK-225B
C1411	E Cap. 100uF 160V A	QEW52CA-107
C1412	E Cap. 3.3uF 160V A	QEW52CA-335
C1508	PP Cap. 5600pF 50V J	QFP31HJ-562
C1511	E Cap. 47uF 160V A	QEW52CA-476S
Δ C1512	Δ PP Cap. 2000pF DC1500V J	QFZ0082-202
Δ C1513	Δ PP Cap. 2000pF DC1500V J	QFZ0082-202
Δ C1514	Δ PP Cap. 2500pF DC1500V J	QFZ0082-252
C1515	PP Cap. 0.53uF DC1200V K	QFZ0067-534
C1520	BPE Cap. 1uF 50V A	QEN61HA-105Z
C1524	M Cap. 0.1uF 200V K	QFM72DK-682M
C1904	E Cap.	QEY0034-001
C1905	E Cap. 10uF 250V A	QEW52EA-106
Δ C1907	Δ MM Cap. 0.1uF AC150V Z	QFZ9008-104

Coils

Symbol	Description	Part Number
L1501	Peaking Coil	A75360-6
L1502	Liniarty Coil	A39934
L1503	Width Coil	C30380-A
L1504	Heater Choke	C30333-A
L1901	Line Filter	A39475-J

Transformers

Symbol	Description	Part Number
T1501	Hor. Drive Transf.	A46022-BM
T1503	Side Pin Transf.	C39050-A

Semiconductors

Symbol	Description	Part Number
IC1501	I.C.	HA11244
X1101	Si. Transistor	2SC1685(R)
X1102	Si. Transistor	2SA673(C)
X1103	Si. Transistor	2SC1685(R)
X1104	Si. Transistor	2SA673(C)
X1105	Si. Transistor	2SC1685(R)
X1106	Si. Transistor	2SA673(C)
X1301	Si. Transistor	2SC1685(R)
X1302	Si. Transistor	2SC1685(R)
X1303	Si. Transistor	2SA673(C)
X1304	Si. Transistor	2SC1685(R)
X1305	Si. Transistor	2SC1685(R)
X1401	Si. Transistor	2SD478
X1402	Si. Transistor	2SD478
X1501	Si. Transistor	2SC2610BK
X1701	Si. Transistor	2SC1685(P-S)
D1101	Si. Diode	W06A
D1102	Si. Diode	W06A
D1103	Si. Diode	W06A
D1301	Si. Diode	1S2473H
D1401	Si. Diode	1S2473H
D1402	Zener Diode	RD10F(C)
D1503	Si. Diode	HF-1
D1504	Si. Diode	V09E
D1505	Zener Diode	RD11E(B)
D1506	Si. Diode	W06A
D1507	Si. Diode	1SS81
D1508	Si. Diode	1S2473H
△D1701	△Zener Diode	RD20EV2
△D1901	△Si. Diode	1S1887A
△D1902	△Si. Diode	1S1887A
△D1903	△Si. Diode	1S1887A
△D1904	△Si. Diode	1S1887A

Miscellaneous

Symbol	Description	Part Number
△F1901	△Fuse 1A	QMF53U1-1R0S
△F1902	△UL Fuse 3A	QMF66U1-3R0S

CRT Socket P.C.B. Ass'y (SU-3016A) Parts List

Resistors

Symbol	Description	Part Number
R3105	V R 200 Ω	QVZ3234-022
R3106	V R 200 Ω	QVZ3234-022
R3113	V R 5K Ω	QVZ3234-053
R3114	V R 5K Ω	QVZ3234-053
R3115	V R 5K Ω	QVZ3234-053
R3116	OM R 10K Ω 2W J	QRG029J-103
R3117	OM R 10K Ω 2W J	QRG029J-103
R3118	OM R 10K Ω 2W J	QRG029J-103
R3119	Comp. R 3.3K Ω ½W K	QRZ0039-332
R3120	Comp. R 3.3K Ω ½W K	QRZ0039-332
R3121	Comp. R 3.3K Ω ½W K	QRZ0039-332

Capacitors

Symbol	Description	Part Number
C3107	E Cap. 10uF 250V A	QEW52EA-106
C3108	C Cap. 1000pF DC1400V P	QCZ9001-102M

Coils

Symbol	Description	Part Number
L3101	Peaking coil	QQL043K-101

Semiconductors

Symbol	Description	Part Number
X3101	Si. Transistor	2SC2611
X3102	Si. Transistor	2SC2611
X3103	Si. Transistor	2SC2611

Miscellaneous

Symbol	Description	Part Number
△	△ CRT Socket	A75522

INSTALLATION AND SERVICE INSTRUCTIONS

COLOR PURITY AND VERTICAL CENTERING ADJUSTMENT

For best results, it is recommended that the purity adjustment be made in the final monitor location. If the monitor will be moved, perform this adjustment with it facing west or east. The monitor must have been operating 15 minutes prior to this procedure and the faceplate of the CRT must be at room temperature.

The monitor is equipped with an automatic degaussing circuit. However, if the CRT shadow mask has become excessively magnetized, it may be necessary to degauss it with manual coil. Do not switch the coil OFF while the raster shows any effect from the coil.

Purity Magnets are used for Color Purity and V Centering Adjustment.

Purity Adjustment procedure is as follows.

1. Remove R-G-B signal from monitor.
2. Turn Green Cut off Control (VR404) on the Neck Board fully CCW.
Turn Red and Blue Cut off Control (VR405) fully CW.
3. Pull the Deflection Yoke backward so that the Magenta belt will appear. (See Fig. 4)
4. Move the two Purity Magnets and bring the Magenta belt to the mechanical center of the screen (See Fig. 5)
5) The vertical center position should be set VRS to $-5/64$ " (-2 mm) as shown in Fig. 6.
Insert service tip "N" on Neck circuit board to "S" on Vert./Horiz. circuit board (See Fig. 13). To check, use the Green raster at low intensity. Be sure to return the service tips to their original positions for the next check.
5. Push the Deflection Yoke forward gradually and fix it at the place where the Magenta screen becomes uniform throughout.
6. Turn Cut off Control, and Drive Control and confirm that each color is uniform.
7. If the color is not uniform, re-adjust it moving Purity Magnets slightly.
8. Move a pair of Purity Magnets at the same time (do not change the angle of the pair), and adjust the vert. center to center of screen.
9. Obtain the three colors and confirm whether white uniformity is balanced.
10. Insert the temporary wedge as shown in Fig. 5 and adjust the angle of Deflection Yoke.

STATIC CONVERGENCE ADJUSTMENT

A recently developed Deflection Yoke and Electron Guns construction has been used on this equipment in combination with In-Line Guns and Black Stripe Screen to make a barrel-type magnetic-field distribution for vertical deflection and a pin-cushion-type magnetic field for horizontal deflection with which a self-converging system can be obtained. This type is different from conventional unity-magnetic field distribution type deflection yoke. 4-Pole Magnets and 6-Pole Magnets are

employed for static convergence instead of a Convergence Yoke.

1. A cross hatch signal should be connected to the monitor.
2. A pair of 4-Pole Convergence Magnets are provided and adjusted to converge the blue and red beams. When the Pole opens to the left and right 45° symmetrically, the magnetic field maximizes. Red and blue beams move to the left and right oppositely (See Fig. 7-a and 7-b). Variation of the angle between the tabs adjusts the convergence of red and blue vertical lines.
When the both 4-Pole Convergence Magnet Tabs are rotated as a pair, the convergence of the red and blue horizontal lines is adjusted.
3. A pair of 6-Pole Convergence Magnets are also provided and adjusted to converge the magenta (red + blue) to green beams.
When the Pole opens to the left and right 30° symmetrically, the magnetic field is maximized. Red and blue beams both move to the left and right (See Fig. 8-c and 8-d).
Variation of the opening angle adjusts the convergence of magenta to green vertical lines. When both 6-Pole Convergence Magnet Tabs are rotated as a pair the convergence of magenta to green horizontal lines is adjusted.

PRECISE ADJUSTMENT OF DYNAMIC CONVERGENCE (See Fig. 10 and 11)

1. Feed a cross hatch signal to the monitor.
2. Insert the temporary wedge and fix Deflection Yoke so as to obtain the best circumference convergence (See Fig. 10 and 11).

NOTE:

The temporary wedges may need to be moved during adjustments.

4. Insert three rubber wedges to the position as shown in Fig. 9 to obtain the best circumference convergence.

NOTE:

- 1) Tilting the angle of the yoke up and down adjusts the crossover of both vertical and horizontal red and blue lines. See Fig. 10 (a) and (b).
- 2) Tilting the angle of the yoke sideways adjusts the parallel convergence of both horizontal and vertical lines at the edges of the screen. See Fig. 11-a and b.
- 3) Use three rubber wedges (thick and thin rubber wedges are used for a purpose).
- 4) The angle of each rubber wedges are shown in Fig. 9.
- 5) After three rubber wedges have been inserted, pull out the temporary wedge.
- 6) Fix the rubber wedges with chloroprene rubber adhesive.

1. Set Black Level Control (VR201) to mid point.
2. Set Red and Blue Drive Controls (VR401 & VR402) to their mechanical center.
3. Set the G2 Screen Control (VR406) and the 3 Cut-off Controls (VR403, VR404, & VR405) to minimum

(CCW).

4. Slowly turn up G2 screen control until the first faint color appears.
5. Slowly turn up the other two color cut-off controls in turn to match the first.
6. Remove ground from R/G/B inputs. Adjust Red and Blue Drive Controls (VR401 & VR402) for white screen.

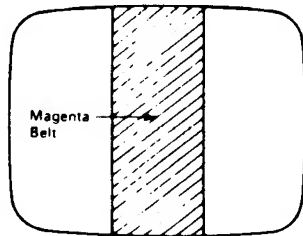


FIGURE 4

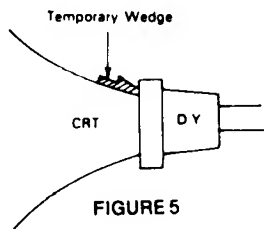


FIGURE 5

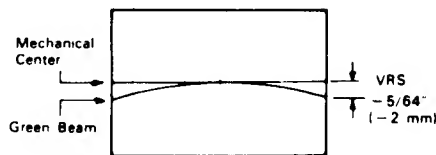
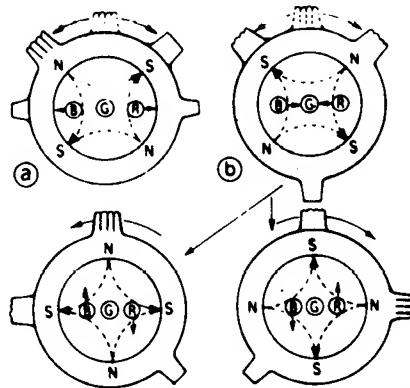
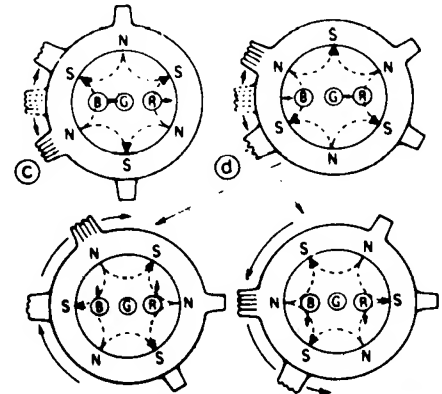


FIGURE 6



4-Pole Magnets and the Movement of Beams

FIGURE 7



6-Pole Magnets and the Movement of Beams

FIGURE 8

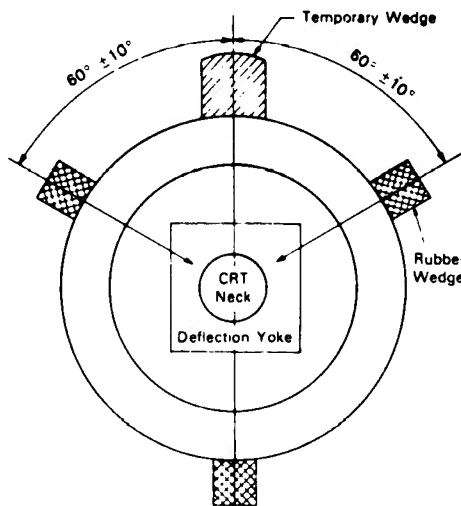
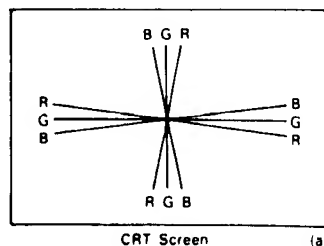
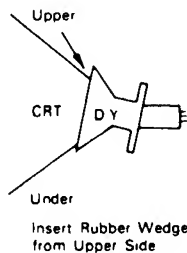


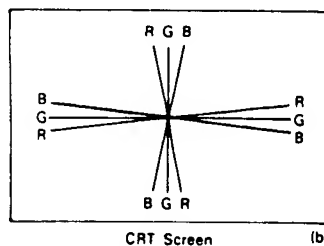
FIGURE 9



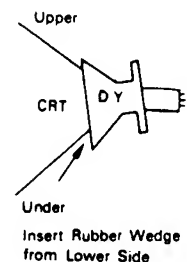
CRT Screen (a)



Insert Rubber Wedge from Upper Side

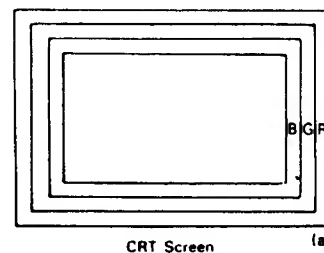


CRT Screen (b)

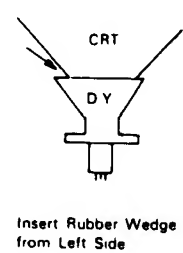


Insert Rubber Wedge from Lower Side

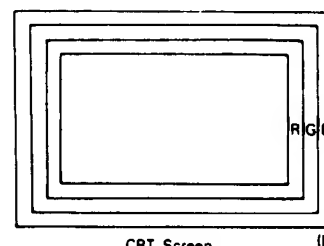
FIGURE 10



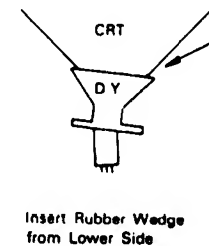
CRT Screen (a)



Insert Rubber Wedge from Left Side



CRT Screen (b)



Insert Rubber Wedge from Lower Side

FIGURE 11

MONITOR - GENERAL INSTRUCTIONS

Service Set-Up Procedure

NOTE: All monitors are equipped with automatic degaussing coils which effectively demagnetize the picture tube each time the monitor is turned on. The degaussing coils will operate any time the set is turned on after having been off for at least five minutes.

The degaussing effect is confined to the picture tube since the coils are mounted on the ferrous tube shield. Should any part of the chassis or cabinet become magnetized, it will be necessary to degauss the affected area by means of a manual degaussing coil. Move the coil slowly around the CRT face area, then slowly withdraw for a distance of six feet before disconnecting the coil from the AC power supply.

Normally little, if any adjustment should be necessary. However, when a picture tube, yoke or similar component is replaced, preliminary static convergence should be done before attempting purity adjustment, and so on.

Set up should be done in a north/south direction. Horizontal and vertical centering taps should be set to the centre position if a major component has been changed.

1.0 Purity

- 1.1 Loosen yoke retaining clamp (figure 2), remove adhesive material fixing wedges to CRT. Remove wedges completely and clean off dried adhesive from picture tube and wedges.
- 1.2 A small quantity of "nail polish" has been used to lock the purity convergence rings in place. This seal must be broken with a sharp tipped instrument before any adjustments are attempted. Some models also use a locking ring at either end of the purity and convergence rings. This must be loosened before adjustments are made. It goes without saying that upon completion of all adjustments, the lock must be reset and/or a dab of paint or nail polish must be re-applied to edge of rings to prevent movement.
- 1.3 Connect an appropriate signal source, eg: Electro-home RGB generator producing a white field plus individual red, green and blue fields.
- 1.4 Bring the long and short purity tab protrusions in line with each other to obtain near-zero magnetic field (figure 4) (In some cases bring the flat and indented tabs together to obtain zero field). Protrusions can then be vertical, horizontal or at any convenient angle to start.
- 1.5 Turn off the green and blue fields and adjust setup controls to produce a red field. (See fig. 3)
- 1.6 Pull the deflection yoke back so that a red band appears in the centre of the screen.
- 1.7 Spread the tabs apart as little as necessary and rotate both rings together to center the red band horizontally on the face of the CRT (approximate). (See Fig. 5)
- 1.8 Slide the yoke towards the bell of the picture tube slowly to obtain a uniform red field (pure in color) across the entire tube face. Juggle back and forth slightly as necessary. Lightly tighten yoke retaining clamp.
- 1.9 Momentarily switch on a cross-hatch signal and rotate yoke to level the pattern on the face of CRT.
- 1.10 Return generator to regain red raster.
- 1.11 Turn off red field and check for pure field for each of the green and blue fields. Reposition yoke if necessary to obtain optimum purity on all fields.
- 1.12 Tighten yoke retaining clamp to prevent yoke shift or rotation. (Do not install wedges at this time.)

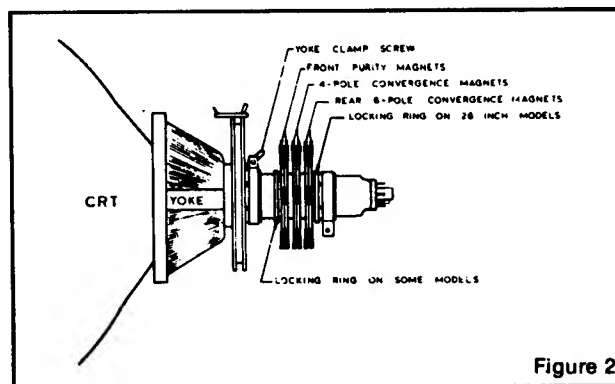


Figure 2

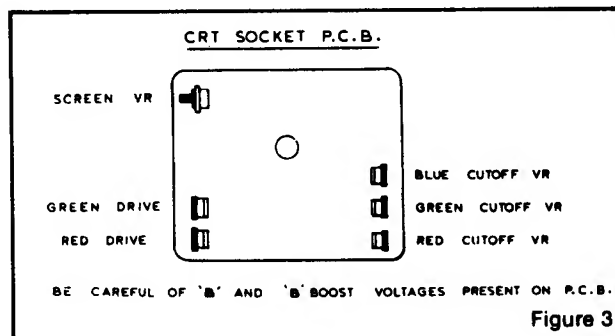


Figure 3

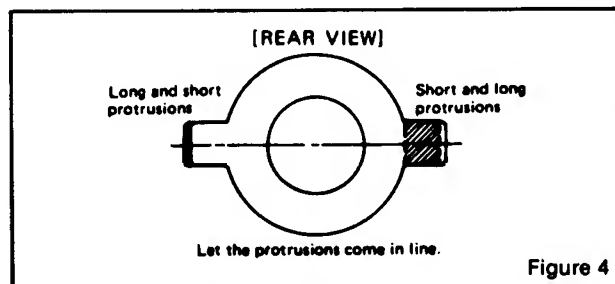


Figure 4

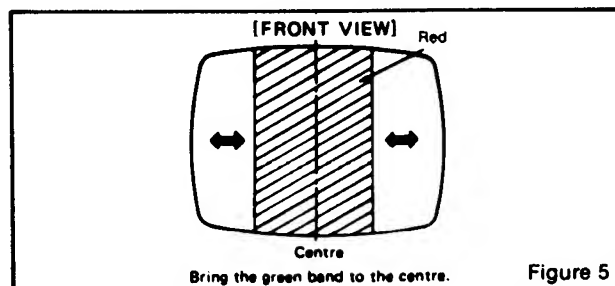
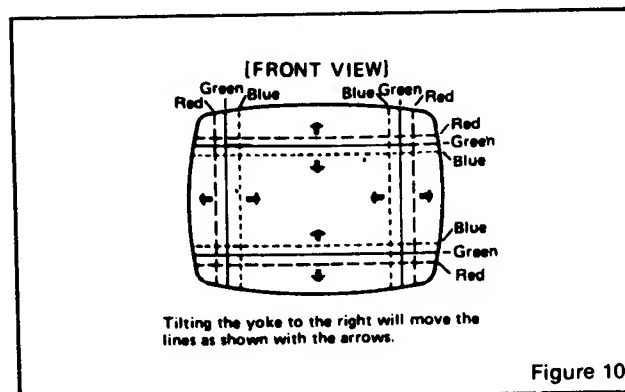
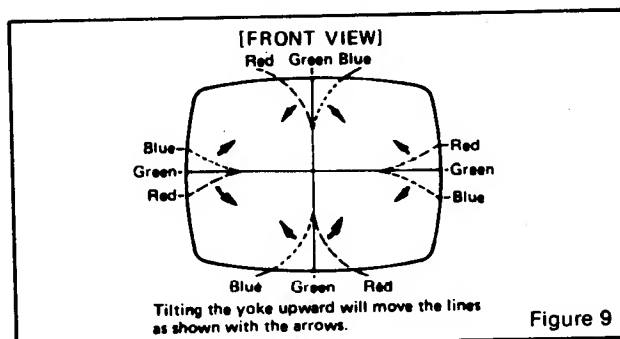
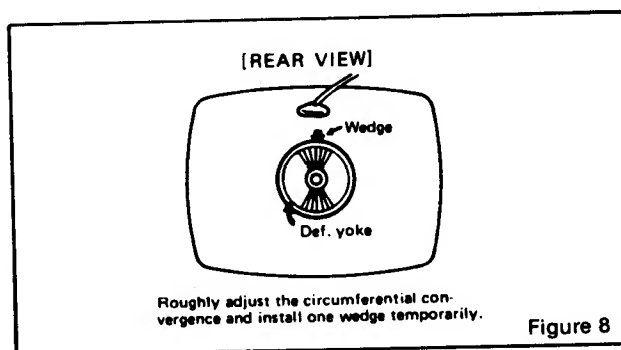
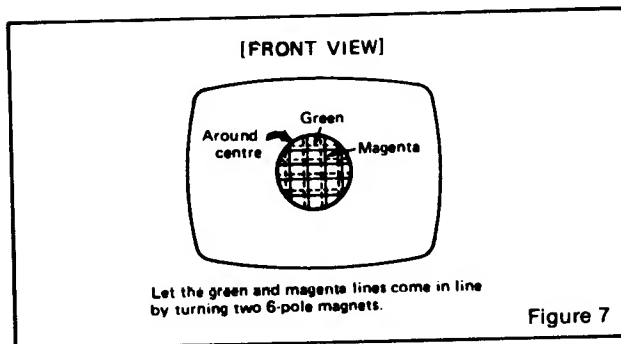
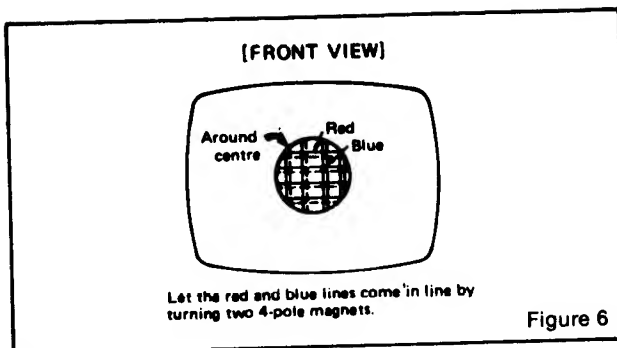


Figure 5

2.0 Static and Dynamic Convergence

NOTE: Static convergence is achieved by four magnets located on the neck, nearest the base of the picture tube, Fig. 2. The middle pair of magnetic rings are adjusted to converge the blue and red crosshatch lines. The rear pair of convergence rings (closest to the base of the picture tube) are adjusted to converge the magenta (blue/red) to the green crosshatch lines. Dynamic convergence is achieved by tilting the deflection yoke up-down and left-right.

- 2.1 Ensure that the controls misadjusted during purity setup (screen, cut-off, etc.) are set to give white balance. See 3.0 below.
 - 2.2 Switch generator to the crosshatch pattern.
 - 2.3 Adjust convergence around the edges of the picture tube by tilting the yoke up-down and left-right, and temporarily install one wedge at the top of the yoke or in a more optimum position. (Figures 8, 9, 10)
 - 2.4 Turn off green input and turn on the red and blue input.
 - 2.5 Rotate the 4-pole (middle) pair of magnets as a unit to minimize separation of the red and blue crosshatch lines around the center of the screen (Figure 6). Variation of the angle between the tabs adjusts convergence of red and blue. (Tilt yoke as required to converge red and blue at the edges as in 2.3 above.)
 - 2.6 Turn on green input to obtain magenta (red/blue) and green crosshatch lines. Rotate the 6-pole (rear) pair of magnets as a unit to minimize separation of the magenta and green lines (figure 7). Vary angle between the two tabs and further rotate as a unit to finalize.
 - 2.7 When convergence of 3 colors is optimized (static in center and dynamic around edges) apply stripe of paint or nail polish to convergence magnet rings to prevent movement. If applicable, tighten locking ring carefully.
 - 2.8 Remove temporary wedge from yoke. Tilt yoke in up-down and left-right direction for best circumference convergence and install 3 wedges. (It is best to use 3 new wedges since they have adhesive backing. Simply pull off tape, slide wedge in place and press outer flap down firmly. For more permanency apply small quantity of silastic or similar material at junction of wedges and picture tube. Do not disturb while material is setting. (Order wedges by part number 39-1233-01).
- ### 3.0 White Balance (Grey Scale Tracking)
- Refer to figure 3. Do the following in subdued light:
- 3.1 Note this adjustment can be accomplished with no signal connected; eg: input connector open or if a signal generator is connected, switch off all 3 inputs at the generator.
 - 3.2 Set red and green drive controls to their mechanical center and turn the common G2 screen control and 3 cut-off controls to minimum (fully counterclockwise).
 - 3.3 Slowly turn up G2 screen control until the first faint color appears, then back off to edge of visibility. Do not touch the associated cut-off control - it should stay fully CCW for the remaining set-up.
 - 3.4 Slowly turn up the other two color cut-off controls in turn to match the first. This should result in the faintest grey.
 - 3.5 Turn on the signal generator with all 3 inputs on. (a crosshatch pattern would be appropriate).



- 3.6** Adjust the red and green drive controls for "neutral white" on high white picture areas. Generally these controls will be left at mech. centre.
- 3.7** Note: When monitor is re-connected with the game the screen control (G2) may require a slight adjustment to obtain proper black level. (the black portion of picture just extinguished).

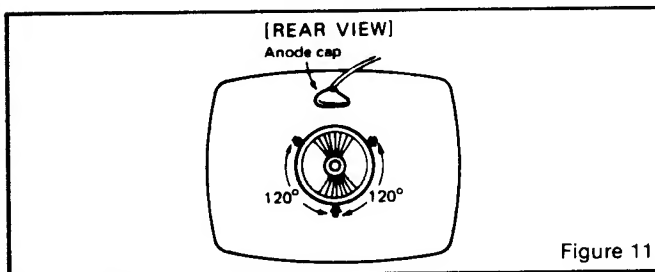


Figure 11

4.0 Power Supply

The regulated +B1 control (R909) has been factory adjusted and normally requires no adjustment. However, if any repairs have been made to the chassis it is recommended that this adjustment should be made.

- Allow 5 minutes to warm up.
- No signal applied.
- Connect an accurate D.C. voltmeter to TP-91 or the emitter of X04 power regulator transistor.
- Adjust R909 for 120V. (See fig. 1)

Note:

Should +B1 control be set too high, it may cause possible component damage. Use an accurate D.C. voltmeter to set B1 (B+).

5.0 Focus

Adjust focus control for best overall definition and picture detail an average signal applied. (Highlights should be favoured.)

6.0 Color Service Generator for G07 Monitor

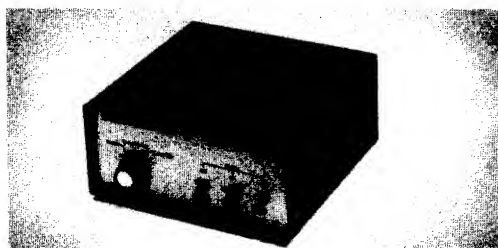
Electrohome has developed a color service generator that is specifically designed for use with the G07 color data monitor. It provides the monitor with both horizontal and vertical sync, as well as the following test patterns:

- 1) Fine cross-hatch pattern
- 2) Broad bar cross-hatch pattern
- 3) Complete field

Three color selection switches, red, green and blue, provide the ability to display the above patterns in the three primary colors as well as the three secondary colors.

This product may be ordered from:

Contracts Marketing
ELECTROHOME Electronics
809 Wellington St. North
Kitchener, Ontario
Canada N2G 4J6
Telephone: (519) 744-7111, Ext. 567



7.0 X-Ray Emission Check

- 7.1 Assure the power supply B1 is properly adjusted to 120V DC. See Item 4.0 (page 8)
- 7.2 Assure that the anode voltage does not exceed max. as per Item 2.0 page 4.
- 7.3 Assure that the high voltage hold down circuit is operating correctly. Use the following procedure.
 - a) Increase the B1 greater than 138.5V by shorting collector/emitter of the power regulator, X04.
 - b) Observe that the anode voltage (EHT) goes to 0. If the EHT does not go to 0, a fault must be located and repaired.
 - c) Remove short and set should return to normal operation. (Note, after the short is removed some monitors may not restart. In this case, remove power from monitor momentarily and normal operation will be restored.

Note:

The protector circuit consists of the components shown below in Fig. 13 with a circuit description.

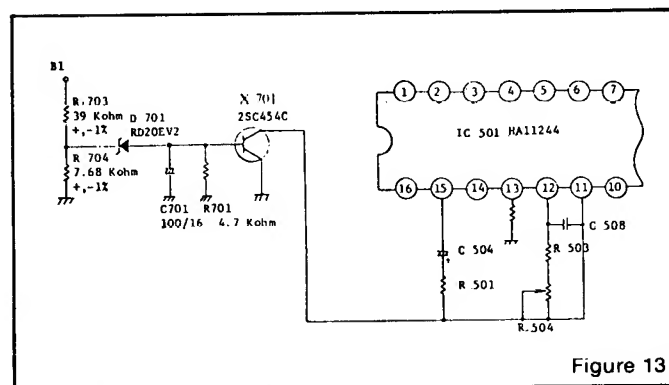


Figure 13

8.0 Circuit Diagram and Description of High Voltage Hold Down or Safety Circuit

- 8.1 Circuit Diagram of High Voltage Hold Down Circuit.
- 8.2 Operation of High Voltage Hold Down Circuit.

The high voltage hold-down circuit protects the high voltage circuit from dangerous voltage with short circuiting between emitter and collector of power regulating transistor.

The base voltage of X701 is increased when the B1 voltage is increased more than 138.5 V DC.

When the base of X701 is increased, a short is produced by X701 between pin 11 and ground of IC 501, shutting down the horizontal osc. and high voltage.

GORF GAME BOARD**PC A084-90708-A873**

CHIP NUMBER	FUNCTION
74LS04	Hex inverter
74LS30	8 input Nand
74LS74	Dual "D" Flip-Flop
74LS86	Quad 2 input exclusive or
74LS153	Dual 4 to 1 line multiplexer
74LS161	4 bit binary counter
74LS164	8 bit shift register
74LS174	Hex "D" Flip-Flop
74LS257	Quad 2 to 1 line multiplexer - tri-state
74LS367	Hex bus driver - tri-state
0066-117XX (2720)	Custom I/O chip
MC14066	Quad bilateral switch - Cmos
MC14099	8 bit addressable latch - Cmos
MC14539	Dual 4 to 1 line multiplexer - Cmos
SC01	Voice sound generator
Additional Devices	
2N4401	NPN transistor
2N4403	PNP transistor
2N6427	NPN transistor
L1, L2, L3	10 uH choke

RGB INTERFACE**PC A082-91363-A000**

TBA530	Op-Amp
Additional Devices	
2N4401	NPN transistor

CONTROL GRIP ASSEMBLY**A082-91379-A000**

LM339	Voltage comparator
Additional Devices	
Spx11879-11	Sensor

GORF ROM/RAM BOARD**PC A082-91364-A000**

CHIP NUMBER	FUNCTION
74LS02	Quad 2 input Nor
74LS08	Quad 2 input And
74LS30	8 input Nand
74LS32	Quad 2 input Or
74LS74	Dual "D" Flip-Flop
74LS133	13 input Nand
74LS138	3 to 8 line decoder/multiplexer
74LS244	Octal buffer
MC14078	8 input Nor - Cmos
2114	1K x 4 - Ram
9332	4K x 8 - Rom

CPU BOARD**PC A082-91354-C000**

74LS00	Quad 2 input Nand
74LS02	Quad 2 input Nor
74LS04	Hex inverter
74LS08	Quad 2 input And
74LS10	Triple 3 input Nand
74LS20	Dual 4 input Nand
74LS74	Dual "D" Flip-Flop
74LS157	Quad 2 input multiplexer
74LS174	Hex "D" Flip-Flop
74LS175	Quad "D" Flip-Flop
Z80	CPU
2719-(0066-115)	Address custom chip
2721-(0066-116)	Data custom chip
74LS245	Octal bus transceiver
74LS257	Quad 2 input multiplexer
74LS74	Dual "D" Flip-Flop
7416	Hex buffer
MC14024	7 stage ripple counter
Additional Devices	
2N4401	NPN transistor
T1S-137	PNP transistor
IN4004	Diode
IN4148	Diode
14.31818	Crystal

PATTERN BOARD
PC A082-91355-C000

CHIP NUMBER	FUNCTION
74LS00	Quad 2 input Nand
74LS04	Hex inverter
74LS74	Dual "D" Flip-Flop
74LS157	Quad 2 input multiplexer
74LS161	4 bit binary counter
74LS175	Quad "D" Flip-Flop
74LS257	Quad 2 input multiplexer
74LS367	Hex bus driver
CD4555	Dual binary 1 or 4 decoder
MC14008	4 bit full adder
MC14013	Dual "D" Flip-Flop
MC14068	8 input Nand
MC14174	Hex "D" Flip-Flop
MC14175	Quad "D" Flip-Flop
MC14516	Binary up/down counter
MC14539	Dual 4 input multiplexer
MC14572	Multiple gate package

RAM BOARD
PC 082-91356-C000

74LS08	Quad 2 input And
74LS14	Hex schmitt trigger
74LS166	Parallel to serial shift register
74LS253	Dual 4 input multiplexer
MK4027 (MK4015)	RAM

AUDIO AMPLIFIER BOARD
PC A082-90903-A000

2N4403	PNP transistor
TIP 31	NPN transistor
IN4004	Diode

POWER SUPPLY
PC A082-90411-A000

LM317	Voltage regulator
LM339	Quad voltage comparator
SG3532	General purpose regulator
Additional Devices	
79M05	Negative five voltage regulator
IN3235	Zener diode
2N3055	NPN transistor

NOTE: When an IC is a LS, it should be replaced by a LS device (low shchottky).

STRAPPING CHART

ROM / RAM BOARD

DOMESTIC FOR ROMS

	1	2	3	4	5	6	7	8	9
X-31	CLOSED	OPEN	OPEN	OPEN	CLOSED	OPEN	CLOSED	CLOSED	OPEN
X-32									
X-33	CLOSED	OPEN	CLOSED	OPEN	OPEN	CLOSED	CLOSED	OPEN	

DOMESTIC FOR PROMS

	1	2	3	4	5	6	7	8	9
X-31	CLOSED	OPEN	CLOSED	OPEN	OPEN	OPEN	CLOSED	CLOSED	OPEN
X-32									
X-33	CLOSED	OPEN	CLOSED	OPEN	OPEN	CLOSED	CLOSED	OPEN	

FOREIGN ROMS

	1	2	3	4	5	6	7	8	9
X-31	CLOSED	OPEN	CLOSED	OPEN	OPEN	CLOSED	OPEN	CLOSED	OPEN
X-32	CLOSED	OPEN	OPEN	OPEN	CLOSED	CLOSED	OPEN	CLOSED	OPEN
X-33	CLOSED	OPEN	CLOSED	OPEN	OPEN	CLOSED	CLOSED	OPEN	

RAM/ROM BOARD

CUT	JUMPER	JU 20	FOR	74LS241	LOCATION	U15
* CUT	JUMPER	JU 21	FOR	74LS244	LOCATION	U15
CUT	JUMPER	JU 22	FOR	74LS32	LOCATIONS	U2, U3, U4, U5
* CUT	JUMPER	JU 23	FOR	74LS08	LOCATIONS	U2, U3, U4, U5

GORF GAME BOARD

CUT	JUMPER	JU 2	FOR	VOCAL SOUND
	JUMPER	JU 1	IN	FOR COCKTAIL
	JUMPER	JU 1	OUT	FOR UPRIGHT